

In This Issue—*What One Battery Association Accomplished*

MOTOR AGE

Vol. XLIV
Number 12

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CHICAGO, SEPTEMBER 20, 1923

Thirty-five Cents a Copy
Three Dollars a Year

More Jordans were sold during the year ending June 30th, than any car at or above the Jordan price except three—and Cadillac, Packard and Franklin are agreeable traveling companions.

No wonder the Jordan dealer organization has tripled in the last eighteen months.

Edward S. Jordan

President
Jordan Motor Car Company
Cleveland, Ohio

GENUINE BLACK & DECKER PORTABLE ELECTRIC DRILLS

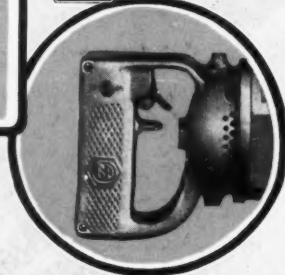
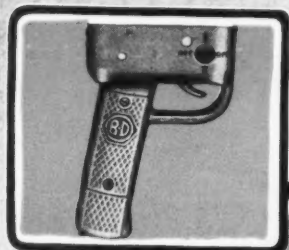
Can be easily distinguished in three ways

1 The well known Black & Decker hexagonal trade-mark on the nameplate. This trademark is registered in practically every civilized country in the world.

2 The motor case is also hexagonal in shape corresponding with the trade-mark. This makes an exceptionally rigid case and the corners leave open spaces around the motor field making it possible to ventilate and cool the outside of the motor field as well as the inner circumference.



3 "The Pistol Grip and Trigger Switch" is thoroughly covered by mechanical patents preventing its duplication by others, although others have designed portable electric drills which have a handle and switch somewhat similar in appearance. The genuine "Pistol Grip and Trigger Switch" is used by us only, and in two styles as illustrated. The final test of genuineness is to operate the switch. The genuine Black & Decker "Pistol Grip and Trigger Switch" stays "on" or "off." It need not be held in either position. One pull of the trigger switches the current on, and it stays on until the trigger is pulled again, after which it stays off until again pulled. It is this feature which has made it so popular.



For your own protection we urge that you apply these three tests and satisfy yourself that you are getting the genuine article.

THE BLACK & DECKER MFG. CO.

Towson Heights, :: :: Baltimore, Md., U. S. A.

Branch offices and service stations carrying complete stocks of parts and operated by factory trained men located in

Boston	San Francisco	Detroit
New York	Philadelphia	Chicago
Atlanta	Kansas City	Cleveland

Canadian Factory, Lyman Tube Bldg., Montreal, P. Q.



The heavily loaded Ford truck and the lightest Ford car with two tons difference in load have to use the same transmission bands. These transmission bands start, stop and reverse your Ford by gripping revolving drums when you press the foot pedals.



The service you get from your Ford depends on the quality of the lining you use on these bands. The ordinary cheap lining that gives only fair service in the light Ford cannot stand the gaff of heavy duty.

Be sure you see the White Stripe down the center of the lining.



Hard Working Fords Need Heavy Duty Lining

Are you using an ordinary, cheap lining in your Ford and expecting it to give you heavy duty service?

The hard working Ford that hauls loads, climbs hills or pulls through mud and sand needs a heavy duty lining. White Stripe Transmission Lining makes the standard Ford bands ready for heavy duty service. When the ordinary lining wears out and quits White Stripe is just beginning its long dependable service.

White Stripe Transmission Lining

is specially woven and treated for heavy duty in trucks, commercial cars and in Fords that get the hardest kind of service.

Special Weave—An extra layer of wearing cords cover the frame work threads, which are exposed to surface wear in ordinary lining. 20 to 50 per cent more cotton—all of it long staple.

Special Treatment—White Stripe is treated with a softening tallow oil treatment that penetrates every fibre, insures against glazing and burning, keeps the lining soft and pliable.

Caution—When you buy cheap lining you bargain for trouble. You can't get the White Stripe weave and treatment in any other lining. Don't buy a substitute—look for the White Stripe down the center of the fabric. Your garage, repair man or accessory dealer has White Stripe or can get it. Every wholesale house carries it.

White Stripe Is Used Constantly in

Ford Trucks
Taxi and Bus Service
Service Cars
Fords with Trailers
Laundry Delivery Fords
Dry Cleaners' Fords
Grocery Delivery Fords
Mail Carriers' Cars
Dump Trucks
Milk Delivery Fords
Farm and Dairy Fords
Department Store Fords
Chassis with Commercial Bodies
Telephone and Telegraph Maintenance Cars
and all Fords that are hard on transmission lining

Advance Equipment is recognized from coast to coast as the finest made. When you buy any article of our manufacture for your automobile, you are sure that it is the best article for the purpose which money and manufacturing skill can produce.

ADVANCE AUTOMOBILE ACCESSORIES CORPORATION

1721 Prairie Avenue

Manufacturers

Chicago, Ill.

ADVANCE CORK FELTBAK TRANSMISSION LINING for FORDS  Lubricates itself—softens brake action. Makes Ford most responsive, easiest car to handle. Designed to overcome shivering and shaking.	RED STAR TIMER for FORDS TRUCKS and TRACTORS  The Scientifically Correct Timer for Fords. Roller of 100 point carbon tool steel. Race of bone-hard fibre.	WHITE STRIPE TRANSMISSION LINING for FORDS  Woven and treated for Heavy Duty Fords—Trucks, Commercial Cars	ADVANCE ASBESTOS BRAKE LINING for LARGER CARS  Made from genuine asbestos for use on larger cars. Buy it for Better Brakes and Longer Wear.	WHITE STRIPE FAN BELT for FORDS and LARGER CARS  Outwears six ordinary belts. Never needs adjustment. Stretches and "Comes back" Made for Fords & Larger Cars	DUPLEX SHOCK ABSORBERS for FORDS  The Shock Absorber for rough roads. Eliminates bounce, side-sway, rebound, vibration. Looks like a part of the car.
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ADVANCE EQUIPMENT

"Every Product the Best of its Kind"



Patented
March 20, 1910
May 2, 1922
OIL-REGULATING TYPE, \$1.00 EACH
One to a piston
Up to and including 5 in. diameter
COMPRESSION TYPE, 25c and up

PERFECT CIRCLES

Have Stood The Acid Tests!

THE bad "oil-pumper" is no longer a problem to the garageman who uses PERFECT CIRCLE Oil-Regulating Piston Rings.

He knows that PERFECT CIRCLES stop oil-pumping and give 1000 to 1500 miles to the gallon of oil, regardless of motor conditions.

PERFECT CIRCLES have stood the test in worn cylinders, and "sloppy" ring grooves.

They have stood the test of the manufacturer who demands positive lubrication in new motors, and no excess after the motor has "run in" Thirty-three automobile and truck manufacturers are now using PERFECT CIRCLE Oil-Regulating Rings as standard equipment.

Likewise, they have stood the supreme test of the racing motor. Every major race in 1922 and 1923 has been won by a car equipped with PERFECT CIRCLE Oil-Regulating rings.

These are Acid Tests!

Performance sells the PERFECT CIRCLE line. Order a trial set today. One set will convince you.

Indiana Piston Ring Company, Hagerstown, Indiana
Harkrader & Harkrader: Western Sales Agents
1603 S. Michigan Ave., Chicago



PERFECT CIRCLE

Oil-Regulating Piston Rings

MOTOR AGE

Reg. U. S. Pat. Off.
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Following the Trend of Public Opinion

"It has been my experience that the greater percentage of accounts DEMAND a standard make tire—and Goodrich is the choice in most cases. With quality merchandise, excellent advertising and individuality in wrappers and cartons such as Goodrich has, I find Goodrich is a leader and a winner."

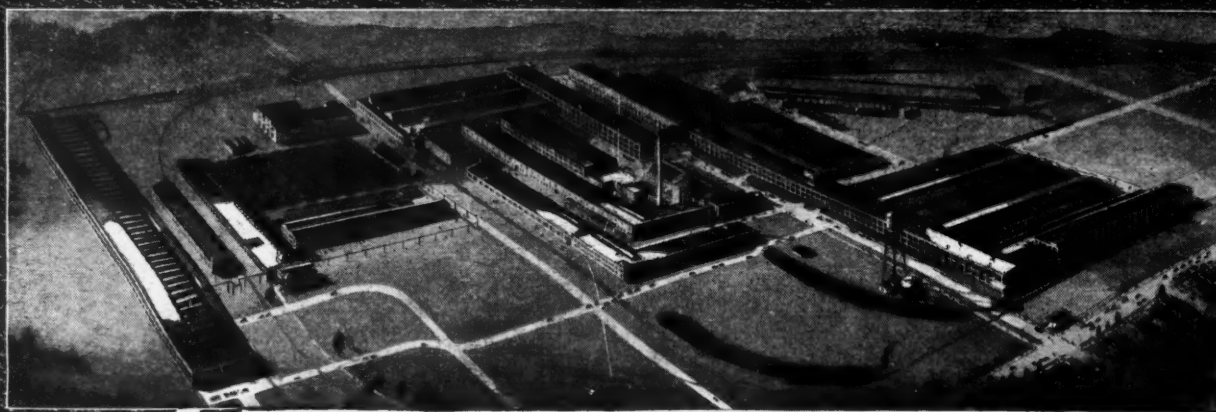
United Tire Shop,
Cleveland, Ohio

One more big factor rounds out the circle of Goodrich dealer success—our close dealer co-operation policy. This is as fixed as Goodrich quality—it builds confidence, permanency, prosperity.

THE B. F. GOODRICH RUBBER CO.
Akron, Ohio

Goodrich TIRES

"Best in the Long Run"



Olds Motor Works, Lansing, Michigan

Five Years From Today

—where will you be? Riding along with one of the biggest outfits in the automobile industry?

Dealers of vision are flocking to Oldsmobile *right now*. Oldsmobile and General Motors have a program which will carry a hand-picked dealer organization to prosperity.

Oldsmobile

"Oldsmobile brought to General Motors the courage of the pioneer. And General Motors, adding its abundant resources of men, money and engineering talent, has made certain that Oldsmobile achievements of the past will be projected into the future in even larger measure."

General Motors advertisement
Saturday Evening Post
February 17, 1923



OLDS MOTOR WORKS, LANSING, MICHIGAN
Division of General Motors Corporation

OLDSMOBILE

A PRODUCT OF GENERAL MOTORS

The Hardest Sales to Lose Should be the Easiest to Make

A Message for Retail Salesmen

You retail men who are trying to fit the whole market with a limited line of cars have felt the discouragement that is bound to follow the loss of sale after sale because you aren't able to suit the buyer with the exact car wanted.

These are hard sales to lose, particularly when the buyer is an old customer who would rather deal with you than anyone else in town.

Any salesman who will take a pencil and figure up what he has lost in commissions in the first six months of the year because he didn't have a car of the right size, style and price to appeal to the buyers that he *could* sell, will lose no time in looking into the Studebaker proposition.

For a moment put yourself in the shoes of a Studebaker salesman. Complete line—all Sixes—all 1924 models—dominating values—universal satisfaction among owners—71 years of prestige.

One rule necessary for success is the ability to *recognize* opportunity. If this looks like opportunity and you are determined to succeed, have a talk with the local Studebaker dealer. He may be looking for a few more go-getters.

1924 MODELS AND PRICES—f. o. b. factory		
LIGHT-SIX 5-Pass., 112" W. B., 40 H. P.	SPECIAL-SIX 5-Pass., 119" W. B., 50 H. P.	BIG-SIX 7-Pass., 127" W. B., 60 H. P.
Touring.....\$995	Touring.....\$1350	Touring.....\$1750
Roadster (3-Pass.)..... 975	Roadster (2-Pass.).....1325	Speedster (5-Pass.).....1835
Coupe-Roadster (2-Pass.)1225	Coupe (5-Pass.).....1975	Coupe (5-Pass.).....2550
Sedan.....1550	Sedan.....2050	Sedan.....2750

THE STUDEBAKER CORPORATION OF AMERICA
South Bend, Indiana

STUDEBAKER



T H I S I S A S T U D E B A K E R Y E A R



Complete Loop Ends Give Full Resiliency, Ample Protection

Bumpers that Win Your Customers Lasting Respect



Para-Mount—
Model AX, 1 3/4-in. steel, Nickel \$32.00



Para-Mount—
Model B, 2-in. steel, Nickel \$25.00
Model C, 1 3/4-in. steel, Nickel 22.00
Model D, 1 1/2-in. steel, Nickel 19.25



Para-Flex, 1 1/2-in. steel, Nickel \$16.00
Para-Flex, 1 1/2-in. steel, Black 14.00



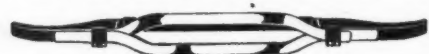
Little Giant, Full Nickel \$26.00



Standard Triple-Gard, Nickel \$20.50



Light Weight Triple-Gard, Nickel \$18.50



Small Kar, Nickel \$15.00
Small Kar, Black 13.00

A few minutes and Gemco Bumpers are on—and on to stay. You have pleased your customer by selling him equipment that improves as well as preserves the appearance of his car.

Cuts Automobile Depreciation

Appearance goes a long way in the resale value of a car and low depreciation is to your advantage as well as the customer's when the car is traded for resale. The full-width of wheel protection given by Gemco Bumpers saves fenders, headlights, radiator and wheels from damage.

The Price and Quality Satisfy

Gemco Bumpers are made of finest grade, oil-tempered steel, scientifically shaped, braced and clamped. Easily and quickly attached. They withstand severe collision in a most remarkable way—a product you can be proud to sell. Styles for all cars.

Write for catalog and dealer discounts

GEMCO MANUFACTURING CO.

760 So. Pierce St.,
Milwaukee, Wis.

Gemco
BUMPERS

Delivered seven MARMONS in six months in town of 2,670 homes

A Letter from Wyandotte, Mich.

Nordyke & Marmon Co., Indianapolis, Ind.

GENTLEMEN:

We want to write at this time and let you know just how we feel about the Marmon car, and how pleasant and profitable the account has been for us to handle.

We took the contract on, as you know, about the middle of last February. We had some misgivings about the contract for a town of only 12,000 population, but we were thoroughly sold on the car and factory organization, and thought that we could at least sell a couple of jobs.

Our expectations were more than realized. In our first six months we sold and delivered seven Marmons without any special effort on our part, and practically no additional overhead.

Our books show to date a profit of approximately \$4,400, and we have spent less than \$100 on policy service. The car does not seem to require much attention after it leaves our floor.

Our investment has consisted of one demonstrator and a small deposit on the contract with the factory. We have not spent any money on advertising. But from now on we are going to work more intensely, because we feel that we could easily have increased our sales to twelve cars if we had put forth greater effort.

We are convinced that, as a money-making contract, Marmon is one of the few high-grade cars that can be merchandised successfully for the small-town dealer.

Yours very truly,

MORRISON MOTOR SALES,

B. H. Morrison



Wyandotte, Michigan, is a typical manufacturing town of 12,000 inhabitants—located in the midst of an agricultural district. Its principal industries are a salt works, a cement plant, a trunk factory, a power truck factory, a shipyard and a soda-ash plant

MARMON

How Reo Puts Maximum Value Behind Its Sales Franchise

New High Powered
Reo "Sixes"

Speed Wagons

Taxicab

Bus Chassis

A Line for
All Year Sales

No matter how small your town is there is a chance to sell Reo products. A few territories are still open. Your application will receive sincere consideration.

REO MOTOR CAR COMPANY
Lansing, Michigan



Reo offers the most complete line of motor vehicles in the world



There is a Reo for every motoring need,—business or social



Reo is rich in public confidence and owner good-will



Reo prices have always represented "The Gold Standard of Values"



Permanency of connection between Reo and its dealers is noteworthy



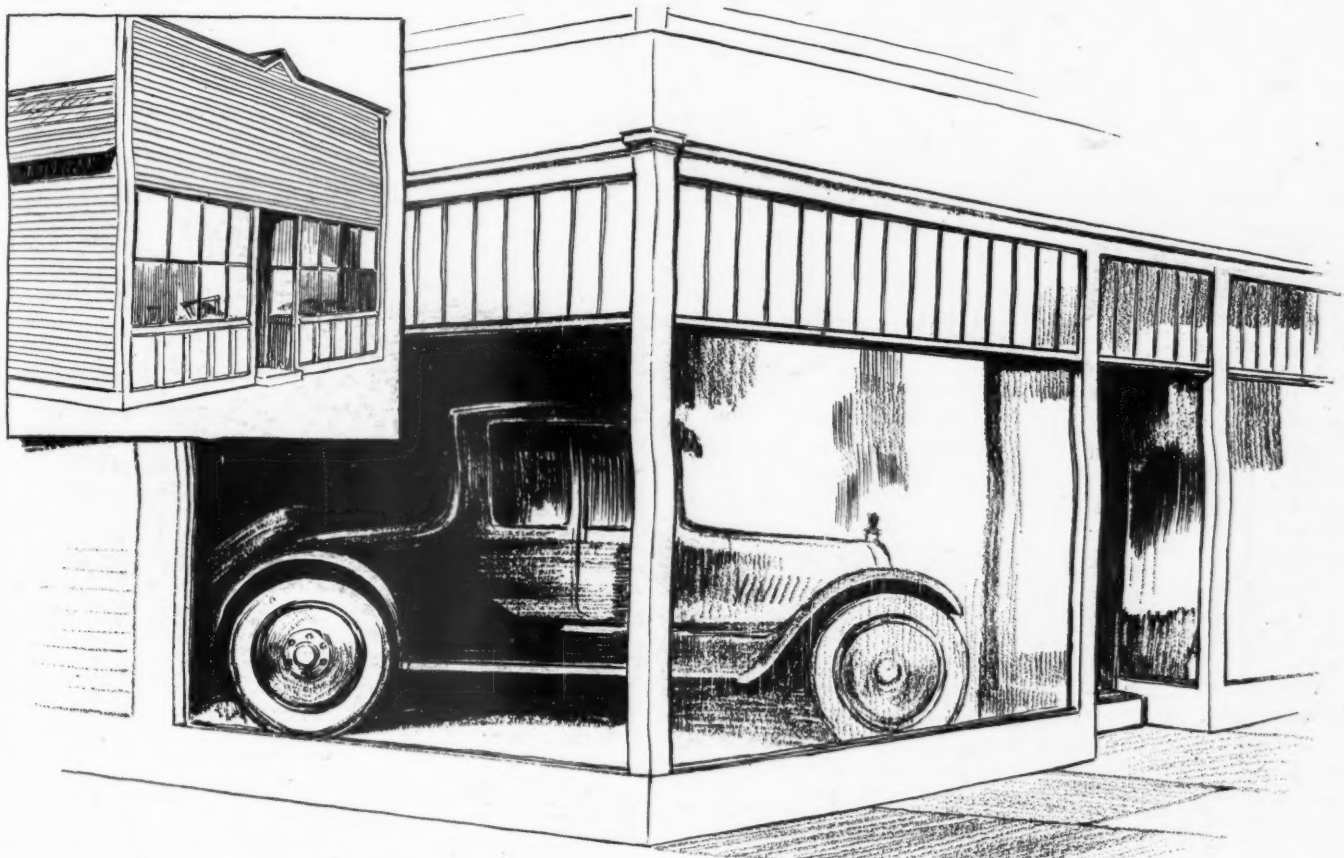
Reo products are based on nineteen years of successful experience



All are designed and manufactured in the big Reo Shops,—not assembled!



MOTOR AGE



Usually it is a simple and inexpensive problem to change the ordinary store front to an automobile display window

Dignity Lacking in Small Town Automotive Dealer Establishments

*Car Salesrooms Have Not Kept Pace With Mercantile Improvements That
Have Been Promoted by Automotive Vehicles*

By CLYDE JENNINGS

THE importance of the small town dealer in the automotive distribution scheme is admitted. Indeed, it is a big worry on the part of those who are responsible for the dealer activity of factories and distributors.

Any wholesale sales manager will tell you that it is easier to get fairly satisfactory dealers in the larger towns than in the small ones. The reasons for this are more or less obvious. It is not necessary to go into the reasons in detail at this time.

In view of the importance of the small town situation, some observations made on a 3000 mile automobile tour through the country may be of interest. This tour was recently finished and it is not intended to say here that the writer stopped and personally investigated the dealers' places of business on this trip—as that would be almost an endless task—but an effort was made to get a good look at hundreds of dealer establishments in the smaller towns.

The dealer establishments in the larger cities, say 50,000

and up, are familiar and are beyond criticism except in detail, and there is no intention here of a discussion of detail of any establishments, rather this is a discussion of the average of small town dealer establishments, of the impression they give to the traveling public and of the impression they give to the persons living in these smaller towns, so far as could be gathered by sounding out persons not directly interested in the trade.

First of all, let it be a part of the record that such an observation trip will open the eyes of any one who was familiar with small town merchandising a few years ago and who has not watched closely the development of the last few years. It is almost impossible to comprehend the number of small towns that have clean, well lighted stores.

Also the tourist or automotive travel development of the last few years has brought about a wonderful advance of accommodations for the physical comfort of the traveler. Time was, and not so very long ago, when in the small town it was practically impossible to get anything to eat except at the hotel, at meal hours, unless one went to the grocery store and bore patiently with the merchant while he was handing out your small purchases of cheese and crackers.

Today it seems that there is not a town too small to have restaurants or lunch counters and while these may be criticized, the fact that they are there, that they average fairly clean and serve food that will stave off hunger is sufficient for the present. They will improve.

These restaurants, the centering of trade in other commodities in the villages and towns and the disappearance of the former crossroads store are changes brought about by the automobile. The automobile and the truck are annihilating distance for the farmer and other rural residents. These two transportation agencies are bringing about a very different business condition.

Centers of trade that are worth caring for are being established and the chain grocery store companies, and similar mercantile organizations, are taking advantage of these business centers and are locating their units in these centers. The former type of store keeper who did not believe in light, brooms and dusters is disappearing from the picture.

This is merely a high light on what the automobile has brought about in the smaller cities and the reason for stating these conditions is to suggest that as a mercantile organization, the automotive industry has not kept pace with those who have been such close observers of what is going on.

Picture today the average city of 10,000 or less and think of the attractive automobile sales establishments in that town. Two you can remember and it is not necessary here to remind you what cars these two establishments sell. For that reason what follows in this discussion will not in any way take into consideration Ford and Dodge dealer establishments.

What Do Signs Mean?

It was rather an interesting experience as we rolled along the highway to comment on the advertising that we saw along the roadside and on the fences as we approached a town and to comment on what we expected to find. In many ways these highway signs indicated the nature of the town and the establishment that we were going to encounter, and then again they did not.

One of the bitter experiences was to read several signs about an automotive dealer establishment in a city and then "try to find it."

Many of these billboards and fence signs appeared to be factory supplies and so we based our opinions on the manner in which they were displayed, how well the natural settings and points of prominence had been taken advantage of and frequently we looked forward to a really up and going establishment.

The disappointment was when we could not find that establishment at all or we found that this dealer was, or had been, running what he called a garage, by which he meant a shop. Probably he was on a back street or in an alley and not a single thing about the place except a small sign indicated that he was a dealer in cars.

It is the exception rather than the rule when, in a town smaller than 5,000, you see automobiles displayed so that he who rides can see. We saw clothing, groceries, cigars, tires,

battery junk, and many other things displayed in the windows of these towns but not a single motor car in many instances.

As we rode slowly through these small towns we looked at the cars that belonged there. It is not hard to tell in the main, which are local cars and which belong to travelers. There are many indications, the nature of the baggage being the surest test.

We found in these small towns all sorts of cars except those of most expensive types. All of the big production jobs were represented and a considerable showing of the older cars that have not attained heavy production. But all prices up to \$3,000 were well represented and a good many of the cars showed recent acquaintance with washing utensils, but a woe-ful lack of acquaintance with a paint shop or a trim department. Broken windows in an automobile are apparently tolerated by many persons who would not think of stuffing rags in a broken window at home. And yet that is what they do in their automobiles when caught in a shower.

Small Town Dealer Program Fails

This situation, we believe, is the direct result of the breakdown of the automotive dealer program as it relates to the smaller towns. It must be admitted by all who observe closely these small towns that Ford and Dodge cars average in better condition in the smaller centers of population than the more expensive cars, and we draw the conclusion from a more or less superficial study, that this is due to the lack of dealer interest in these other cars.

There is a surprising increase in the number of "Official Service" signs in the country and in the smaller towns. Some of these service signs appear on excellent appearing maintenance shops. Evidently two or three manufacturers have been extending their service in the eastern section of the country with energy and intelligence.

It seemed strange that so many of the better maintenance establishments carried these service signs and did not sell cars. So the question was put to one shop owner, who was "official" for two makes of cars. His answer is interesting:

"I am a mechanic and do not believe that I could sell cars. I am willing to invest in a reasonable stock of parts to supply cars that are used to any considerable extent in touring and these signs have paid me. But every 'Jim Crow' shop around here has the agency for a car and I do not want to get in their class."

Think of that! All of you who have been feeling sorry for the independent maintenance man. Here is one who, with considerable justification, does not want to be classed with the car dealers of his community.

Then there was one little Pennsylvania town of probably less than 1,000 that did not have a motor car on display, at least we did not find it if there was. This is the railroad station for a considerable mountain valley and the daily shipments of milk from that railroad station are between 1,000 and 1,500 cans. A daily cash return of from \$1,600 to \$2,400 and no visible place to buy motor cars. (Remember the exceptions.)

One thing was especially notable on this trip:

None of the party can remember a single instance where a car dealer indicated any willingness to talk of the automotive needs of tourists driving his make of cars. How welcome a sign like this would have been:

"Tourists driving Runwell cars are invited to visit the Runwell salesroom. Information, toilet facilities and repairs at reasonable prices. It is a part of our mission to see that Runwell tourists have a pleasant journey in this section."

There was not an indication in any publicity that reached us at any time that any dealer wanted to see any cars of the make that he handled. Apparently there is no sense of obligation on the part of most dealers that they should contribute to the contentment of persons who ride in the make of cars that they sell.

How the Tourist Views the Dealer

From some talks with tourists we are inclined to believe that the average automotive traveler believes that the most satisfactory thing for him to do if he needs repairs is to stay clear of the dealer in the kind of a car he drives. Most tourists appear to believe that the independent shop man is their only

friend and they cannot tell whether or not he is a friend until the incident is closed.

The tourist is not ungrateful, however. He is quite willing and anxious to tell fellow tourists where he got good treatment when he needed repairs and also he has a very good memory for the place where he was "gypped" or "gouged."

The buildings of the automotive dealers in the small towns are little short of a disgrace to the industry. (Remember the exceptions.) In many places we saw dealer signs over buildings, where the entire establishment would not equal in value one car of the kind that was said to be on sale there. Every other line of business in the town had at least one better building and in fact we cannot remember a mercantile establishment in that town in a worse building.

The observations on which these comments are founded were in the section east of Illinois north of the Mason Dixon Line. It is not intended to say here that there are no presentable salesroom or automotive establishments in that section of the country. There are, but the exceptions are too seldom encountered as to make them notable.

There are many automotive dealer establishments that could be made suitable showrooms with very little expense. It is not uncommon to see an automotive dealer housed in a building with the old small, high base show window. He has cars in this room, but no one can see them from the outside.

A few dollars of expense, the price of one billboard, would make his place a very presentable one. Why the distributor or factory, or whoever supplied him with the billboard, does not undertake this expense rather than the billboard is extremely hard to understand. There appears to be a lack of intelligence, as it is applied to the individual case.

One cannot escape the impression, as one notes the conditions in these small towns, that the man who established these dealers was working on a basis of the number of signs he assigned, rather than on a basis of car sales in the future.

Combining the observation of the cars that belong in the small towns and the talk about where they were bought and facilities for buying more and higher priced cars when these are gone, one cannot help coming to the conclusion that the solution is in establishing the Transportation Merchant in the small town. By this is meant the automotive dealer who will sell a line of cars, priced at proper stages to meet the bank accounts of the purchasers, up to at least \$3000.

Give Them a Chance at Better Cars

And let it be recorded here: The person who believes that higher priced cars cannot be sold in the small towns does not know what he is talking about.

Higher priced cars are appreciated and owned in the smaller towns and will be bought there when adequate dealer representation is provided.

There is not now a proper appreciation of dealer dignity in the smaller towns taken as an average. There are too many retired failures who have taken on the "agency" for a car with a vague idea of getting rich or of providing an excuse for the man being in business.

It is only right and proper that a man who has the dealership for a well made, beautiful car should be required to provide a proper setting for his merchandise and the small city

trade will not be realized upon until this is accomplished.

Another incident that was noticeable:

In many towns, not the smaller cities especially but some quite large communities, we saw such signs as this:

"New 1924 models of the Runwell car on exhibition here," over a vacant salesroom.

Dealers say that they had been promised a car but it had not arrived and that the sign was put up the day before the car was to come. Or that they had one car, but had delivered it to a buyer on promise that another was on the way.

Time and again we saw automotive travelers influenced by such a sign draw up to a salesroom only to stop, look, then go on.

Evidently the advertising for new models has been released in many cases before there are enough cars to supply even prominent dealer points, or dealers have not been properly coached in holding onto a car for exhibit.

The remedy! It appears that factories and distributors would make haste faster by going more slowly in naming dealers, and in making higher requirements for dealers. Grocery dealers make a better showing.

Another remedy is suggested by the policy of one factory which is making small city dealers of thrifty salesmen in the larger establishments handling that line. The city salesman who has saved some money would at least make a proper presentation of the car. When this salesman makes good in the small city, he can move up the line to a larger city.

On Selecting Dealers

The situation certainly calls for attention. The remedy undoubtedly is simple and as a primary basis of small town dealerships, we would suggest that only such men be selected as will agree to acquaint themselves in part with the doings of the automotive industry.

So many of these men are not a part of the industry at all. They might as well be selling washing machines. Then there is the other class, those who have put up the dealer sign because they think it will give class to their shop. Sweeping out the shop would, in many cases, be a better start for dignity.

There is evidence that this situation is appreciated by at least one factory sales department. This department is putting on an energetic campaign to improve the housing of the dealers selling that car. The first step was to provide all of the factory representatives with a pamphlet "Building Suggestions for Automotive Dealers." Other factories have distributed this pamphlet to their dealers but have not put the personal persuasion behind it.

Before closing, we want to warn small city dealers of one danger they are incurring in neglecting the tourist:

The tourist is here and he pays his way. In neglecting him, you help to build up a service shop that will care for him. This tourist shop expands and in many cases makes money. The owner has energy and ambition and he is likely to want to expand further. When he goes after a car dealership he will likely get it, because he has proven he has business ability, energy and foresight.

So when you lose your dealership to an independent maintenance shop that has been built up on tourist trade, blame no one but yourself.

DAW'Z DIARY

SEPT. 21—I guess it aint no use trying to save up to go in bizness becuz i will be a old man before i get enuff to even fit up a small shop and it aint no use starting no shop if you cant get a good tool equipment. Thats what we are up against here the boss being to tight to give us any desent equipment and us having to do things with a hammer or something wich we shuld a had a speshul tool for.

Every time i think about all the stuff a fella needs to do good repair work and make it snappy it makes me sick wich is quite often me thinking about it a good eal becuz they is so many fellows starting shops that the woods will be full of shops before long.

Enyhow a bunch of them guys dont know what they is up against starting up with nothing but a screwdriver and a hammer and a coal chisel you might say.

All they can make is about 35 bones a week and out of that they has to pay their rent and expenses wich is quite a bit moren they think its going to be wen they start up them thinking Gee when i get working for myself all i take in will be gravy.

A fellow cant do no good work with out some good tools to do it with. Gosh a guy has to have about 200 dollars worth of grease guns and renches and stuff to be able to grease all the cars that come along. Gosh i cant save 200 dollars in a year unless i quit going with my girl and crall in a hole and not do nothing a tall. I wish i had a rich unkle —Gee wouldnt that be swell.

New Model 60 Haynes Featured by More Powerful Engine

Crankshaft Entirely New Design. Main Bearings Now Lubricated by Pressure. New Model Lowest Priced Car in Haynes History

HAYNES is offering a new touring car and sedan at the lowest prices in Haynes history. The car is called the Model 60, and has the following changes over the Model 57 engine:

The crankshaft is entirely new in design, being larger throughout. Metal has been added to four cheeks of the crankshaft to facilitate balancing. The shaft is $2\frac{3}{8}$ in. in diameter at the main bearings, the front being $3\frac{5}{16}$ in. long, center $2\frac{3}{4}$ in. and the rear $3\frac{5}{8}$. The connecting rod bearings are $2\frac{1}{4}$ in. in diameter and 2 in. long.

An additional oil slinger has been added at the rear of the shaft in order to obviate any possibility of a leak at this point. Light weight iron pistons are being used with four rings above the piston pin.

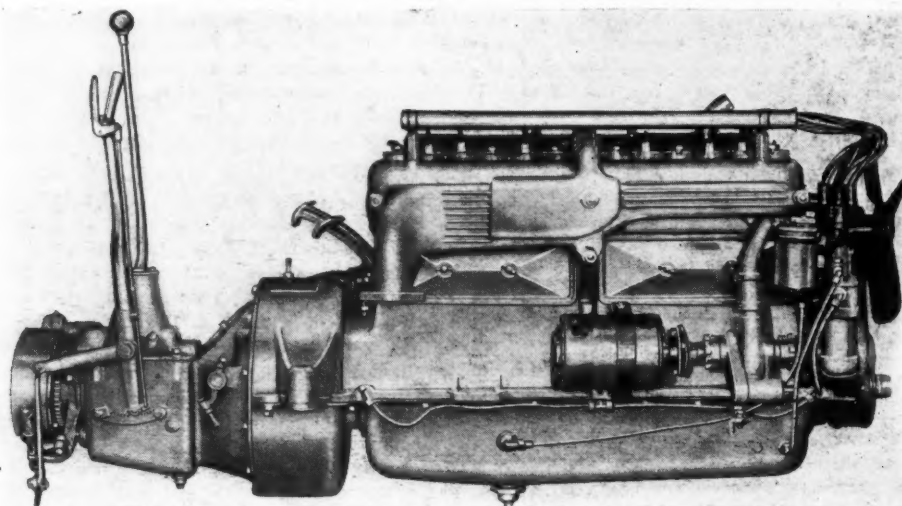
The bore of the engine remains the same, $3\frac{1}{2}$ in., but the stroke has been shortened $\frac{1}{4}$ in., making it $4\frac{1}{4}$ in. The connecting rods have been lengthened $\frac{3}{16}$ of an inch.

A change has been made in the oil pump location, the pump now being mounted on the right hand upper position of the cam gearcase, and is driven by means of helical gears from the water pump shaft. The pump now has an adjustable oil pump regulator integral with the pump cover, and an oil pressure gage is mounted on the instrument panel, designed to show a maximum pressure of 20 pounds at 20 miles an hour.

The main bearings are lubricated by direct pressure lines, and now have annular grooves which distribute the oil equally over the whole surface of the bearings. The overflow from the regulator feeds the connecting rod dipper



Mohair upholstery is used for the seats of the new Haynes 60 sedan. A sun and vision visor, nickel plated radiator and an aluminum hood ledge are exterior features of the car. The new Haynes Model 60 touring car, which is finished in Burgundy wine color. A permanent top is a feature of this model, which sells for \$1,295



Right side view of the Haynes Model 60 engine. The outside oil lines are accessible for cleaning and accessibility, in fact, has been built into the engine generally

troughs, timing gears and water pump bearing direct. This system, therefore, makes a combination force-feed lubrication to the main bearings and circulating splash to the other parts. All of the oil lines with the exception of the distributor tube in the lower half of the crankcase are outside the engine, making them accessible and easy to clean.

Composition timing gears are also used, which in combination with the large amount of oil fed to them, insure silent operation.

A larger water pump is used. The pump has a larger shaft and is much more accessible for repacking. The shaft bearing also has an oil feed direct to it from the pump overflow. A change also has been made in the location of the fan drive pulley, which is mounted on the crankshaft.

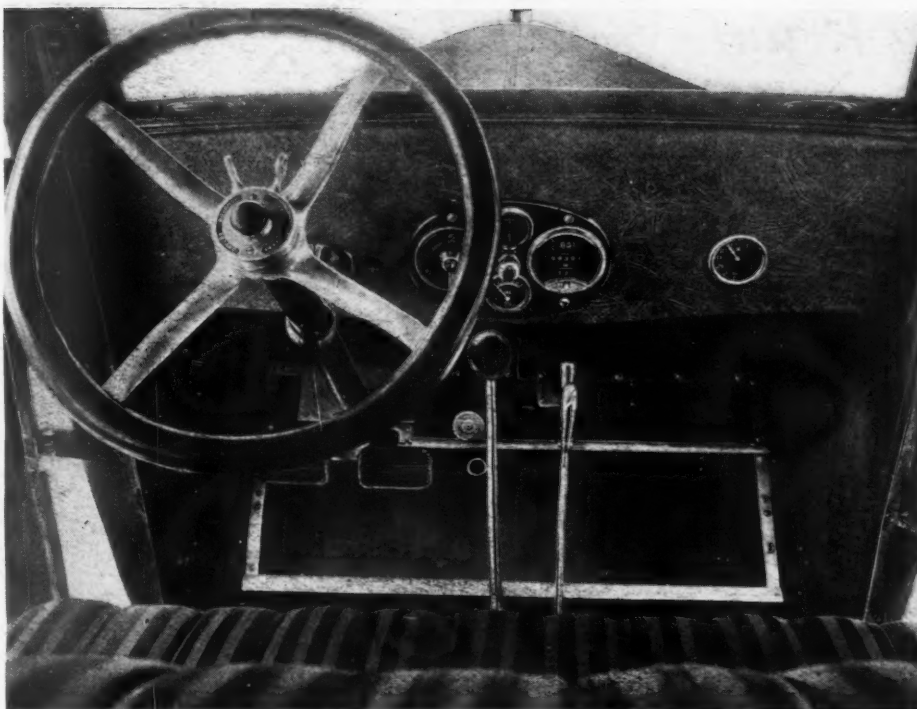
Much attention has been paid to the balancing of reciprocating parts, the crankshaft, flywheel and clutch being

balanced on machines and the connecting rods being matched not only for total weight but for the big end weights as well. Shortening the stroke, a more rigid crankshaft, longer connecting rods and pressure feed lubrication to the main bearings have raised the peak point of the engine 400 r. p. m. The new power-plant is mounted on spring leaves at the front. These have a cushioning effect between the engine and the frame and stop all vibration, it is stated, from being transferred from the engine to the frame and then to the body.

A slight change has been made in the location of the distributor and coil, these now being mounted at the front of the engine on the oil pump body cover, and the distributor is driven through the oil pump shaft. This location makes all parts accessible and in addition gets the coil out of the way of any water or mud which may be splashed from the road. The distributor drive is positive and located as it is on top of the oil pump, the shaft is always well lubricated. The distributor and throttle are now controlled by rods in place of wires.

The model 60 is mounted on the 120 in. wheelbase chassis, which carries as standard equipment disk wheels with demountable Firestone rims with an extra rim mounted at the rear. There are no grease cups on the chassis and in place of them the Dot pressure oil system has been installed on all spring shackles and other lubrication points on the chassis.

The clutch has been improved and is equipped with four friction discs. All backlash is avoided, it is stated because the center of the drum disc is keyed and held firmly to the main drive gear by a taper, thus eliminating the spline. A feature that will appeal particularly to



New gasoline and spark control levers on the Haynes steering wheel. All of the instruments on the panel are grouped in a compact oval. A clock is furnished in the sedan and brougham

motorists is the large number of parcel compartments in the Model 60 touring car. There are carrying places in three doors with a tool kit in the left front door. There is another compartment under the front seat and a tonneau compartment is located at the back of the front seat. A new feature is found in the spark and throttle control levers on the steering wheel. The touring car is upholstered in Spanish leather and the front compartment is covered with

linoleum, while that of the rear compartment is covered with heavy carpet.

Longer springs and a new system for checking spring rebound are also features of the new car. Nickel plated radiators and aluminum hood ledges are standard on all models. Prices on the Model 60 are as follows: Standard touring, \$1,295; standard sedan, \$1,895; sport brougham, \$2,195; sport roadster, \$1,695; these prices are list, plus war tax f. o. b. factory.

Some Points to Remember When Locating Body Squeaks

SQUEAKS and body rubs are a source of annoyance to the car owner and tend to undermine his satisfaction in his car. They are caused by friction in various parts of the car. The causes can not always be eliminated but the squeaks can be silenced.

To remove squeaks and body rubs, the obvious thing to do is to tighten the body bolts. These are placed along the sides of the frame just under the side apron. On cars weighing more than 2,700 lbs. there may be 12 or 14 and on cars weighing less than 2,700 there may be 8 or 10. Soak the felt washers on these bolts between the frame and body with equal parts of kerosene and oil, well mixed. Tighten down the two radiator bolts and apply the squeak oil liberally to the shims there. Then lubricate all the shackle bolts thoroughly. Give especial care to the front shackle bolts of the rear springs. They are the worst squeakers.

All of the body felts should get an ample dose of the squeak oil. This in-

cludes the bands that hold the gas tank, the hood lacings and the felts between the fenders and the body where the fenders are bolted or clamped on. Next oil all the brackets such as the headlamp brackets on the front fenders, vacuum tank brackets and coil brackets.

This will remove the ordinary squeaks from a car. At this point have one man shake the car from side to side and have another man go around the car and listen carefully to try to locate any squeaks that may remain. Do not bounce the car up and down as a test for squeaks, because that only tests the spring and shackle bolt squeaks.

Armored electrical wires rubbing against the body or frame will sometimes cause squeaks that are hard to locate. A little oil on these will remedy this. A mysterious squeak at the front or rear end of a car can often be stopped by tightening the cross member rivets. The engine dust pans will not squeak if they are tight.

If the side aprons squeak, try driving them towards the running boards at the base. Be careful to hit them right at the joint or they will dent. If this does not help take a few strings of water pump packing and drive it down between the

apron and the running board with a screw driver.

Spare tires mounted on fenders or running boards will often squeak. Tighten the brackets, change the position of the tires a little, then tighten the straps.

In case of an enclosed car if the doors squeak, take a cake of beeswax and coat the jams and sills of all the doors. Then take a cloth and rub till the surfaces shine. This, with a little oil applied on the locks and hinges, will make doors noiseless.

If the squeaks have been entirely removed from an automobile they will be slow to return but if there is one little squeak or body rub it will become loud within a few miles of driving.

Australia, which is America's leading automotive export market, imported \$23,000,000 worth of automobiles and parts from the United States in 1922. It is buying 60 per cent of its chassis, bodies, equipment and parts from us, and in addition, its imports of chassis from the Canadian factories of American manufacturers represent about 20 per cent of its total purchases. About one out of every three makes of American cars are represented in Australia.

Front Wheel Brakes Optional on Marmon at Additional Cost

FRONT wheel brakes are now furnished as optional equipment on Marmon cars at \$125 additional list. The new brakes are connected with the standard rear wheel linkage, which is unchanged in the application except for an extension on the brake pedal, employed to actuate the front wheel linkage. The new brakes are internal expanding. In developing the design one of the factors that has been given major consideration is light foot pressure. One of the problems connected with four-wheel brake design is the necessity for compromising between long pedal travel and heavy foot pressure in order to actuate four sets of brakes. The Marmon design utilizes the wrapping principle in this brake to reduce the pedal pressure necessary to apply.

The front wheel brake mechanism is shown in Fig. 1, which illustrates the right front brake with drum removed. The shoe assembly rests against three supports, 1, 4 and 7, being drawn inward against these supports by the tension of three springs. Each support is adjustable and can be used in regulating the clearance between the brake band and the drum. The lower end of the band assembly is hinged to the link 6 at 5. This link is also hinged at its upper end, where it is secured to the drum support. At the upper end the brake lever is free to move circumferentially, being actuated by the lever arm, 8.

This lever arm is keyed on a shaft which extends through the wall of the drum support and dust shield, where it forms on the outer end a crank arm for connecting the control linkage. When the brake pedal is depressed it causes the lever arm, 8, to force the brake drum outward into contact with the inside of the brake drum. The initial braking

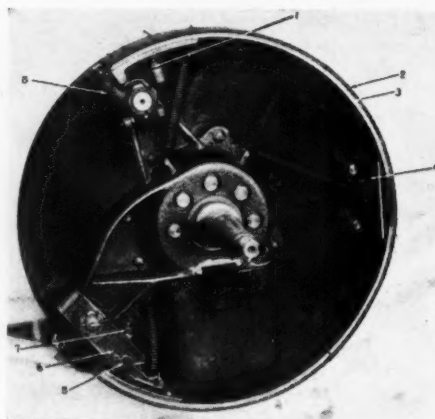


Fig. 1
View showing details in the Marmon front wheel brake

effort is caused by the friction due to direct pressure on the shoe against the drum. Further application of the brake by the driver causes the band to exert a greater pressure against the drum due, first to the greater direct force but second, greatly augmented by the tendency of the band to rotate with the drum and press outward against it, thus securing the powerful wrapping effect.

The brake control linkage is shown in Fig. 2. The lever arm 8, Fig. 1, terminates externally in the crank arm 9, Fig. 2. This arm is operated by a cross shaft 12, which lies within the rear channel of the front axle I-beam and supported by it in self-lubricating bearings. The ends of the cross shaft are connected to the crank arms on the left and right brakes through levers and links. The upper end of the links terminate in a ball and socket joint entirely enclosed and provided with a lubrication

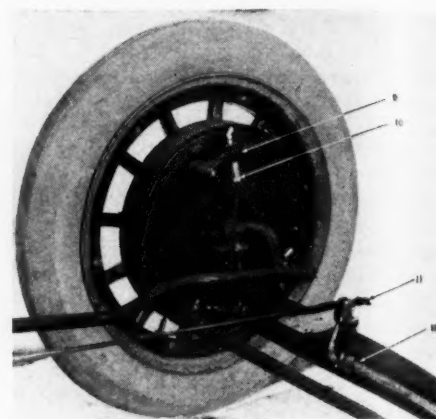


Fig. 2
A closeup of the Marmon front wheel brake, showing the control lever on the front axle

fitting. The ball end is threaded and provided with a lock nut 10, serving as an adjustment for equalizing the left and right front brakes.

The position of the ball joint is in alignment with the axis of the steering knuckle so that steering the car does not cause any relative motion in the brake mechanism and the application of the brakes is not affected. Regulation of the relative braking effect of the front and rear wheel brakes is secured by turning a wing nut, 11, which serves to increase or shorten the effective length of the brake rod.

All of the brake mechanism is housed within the brake drum as far as possible as a safeguard against dirt, water, mud or ice. The steering has been kept independent of the brake mechanism and the front axle has been strengthened to take care of the additional stresses due to the application of the front wheel brakes.

Victor Brings Out Speed and Heavy Duty Trucks

VICTOR MOTORS, INC., recently organized in St. Louis for the manufacture of speed and heavy duty trucks, taxicabs and busses, has announced the completion of the first of a series of six new trucks.

This truck, Model 25, is known as "Lightnin'."

The engine is of the L-head type, 4 by 5 in., with suspension removable cylinder head. The clutch is of the multiple disc, serrated tooth type. Service brakes are 16 in. in diameter, external contracting type.

The emergency brake is on the front universal joint. The springs are of alloy steel, the front being 40 in. long and the rear 52 in. The fenders are of heavy stock with passenger car appearance.

While the truck is built with standard wheelbase of 131 in., special lengths will



Chassis of the Victor model 50 truck, which has a carrying capacity of 6,500 lbs.

be built to suit convenience and requirements of users. The Victor speed job has a load-carrying capacity of 1,500-2,500 lbs., with 35 by 5 truck cord tires on all wheels. The control, levers, instrument board and driving seat have all

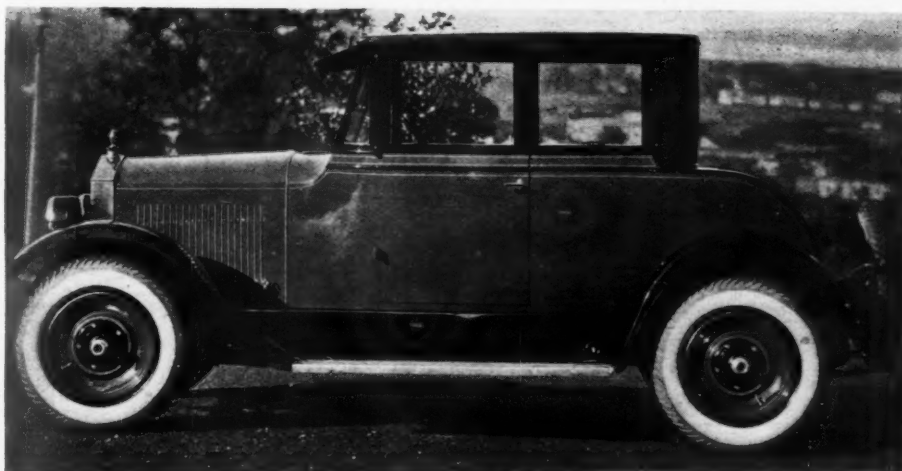
been worked out with care, with the object of providing convenience and comfort, with safety of operation.

Bodies will be built by the Victor company to suit requirements. The price of this speed job is \$1,200.

Announcements from Car Manufacturers

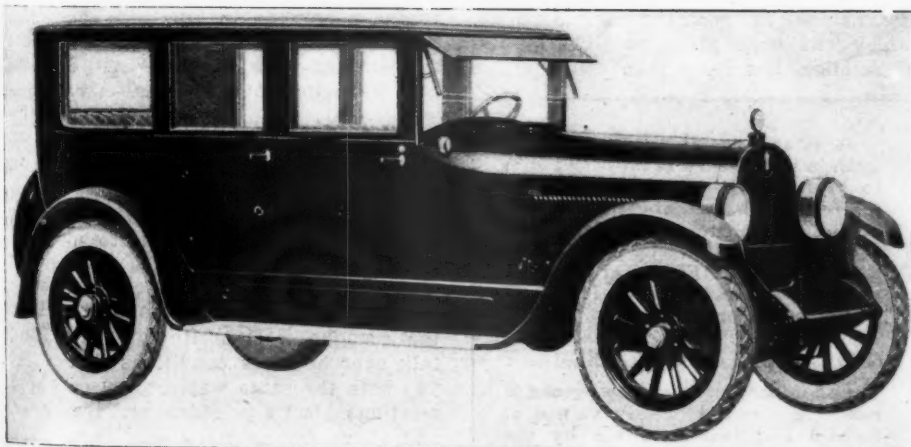
Moon Coupe With Balloon Tires

The Moon Motor Car Co. announced this week that hereafter all models of Moon cars may be had equipped with balloon tires if so desired. The model illustrated is equipped with 30 by 5 in. balloon tires



Cole Adopts Balloon Tires

The Cole Motor Car Co. announces that balloon tires with necessary wheel equipment are now obtainable on all of its current models as shown here on the Cole phaeton



Model Y Case Sedan

The new model Y sedan, recently placed on the market by Case is priced at \$3325

New Auburn Sedan

This new five-passenger sedan is mounted on the 6-43 Auburn chassis. The top is of the soft roof type



Leaking Profits Given a Knockout by the Automotive Electrical Association of Wisconsin

Problems of Lost Time on Free Service, Stolen Rental Batteries, and Electricians That Can't "Electrish" Are Solved by Cooperation



IN Oshkosh, Milwaukee or Fond du Lac, it didn't matter much, conditions were about the same—some three years ago. Each battery dealer figured the rest were crooks, only slicker, and by all the rules of right and justice should be residing at the county jail or at Leavenworth.

But time changes many things, and the thoughts of battery shop managers are no exception, and now the discovery has been made that the other fellow may be half way decent after all, even if he does seem to be a competitor. He may sell merchandise that stays put, and stand back of it, he wears clothes, even as you and I, eats occasionally when business is good, probably has a family and some kids and may be even a regular fellow, when you get to know him.

That's the secret of the whole thing, "When you get to know him." And instead of sliding by the other fellow's station with the hat pulled down over one eye, it's considered the thing to give the high sign, stop in and say hello, get acquainted and find that the man whom you figured an enemy, potential or otherwise, can really be your best friend.

That in short is the work of an association when rightly directed. Yes, you may say that in your town, the fellows won't stick together, some of them are always cutting prices, giving credit after agreeing not to, and generally practicing Russian tactics. Still it does not stop an association from being formed if there are but two to do it. Problems that come up in your business and the other fellow's can be solved better by

two heads than by one, and in time the others will see the light and join you.

That's how it is working out in Milwaukee and the adjoining towns, and the saving in rental batteries alone, which has been made possible by the association, has more than made up for

A strong rental agreement with teeth in it is needed in most localities to protect the battery station from the professional deadbeat.

The agreement given in this article is used in Milwaukee by members of the Automotive Electrical Association of Wisconsin, and it brings home the bacon.

RENTAL BATTERY AGREEMENT

The undersigned hereby agrees to return the rental battery valued at \$30.00 and leased to me by the Blank Battery Co. for a period not exceeding five days covering necessary time to charge or repair my battery.

I further agree to pay a rental charge of 25 cents per day for this rental battery and in the event that I fail to return rental battery or suit is necessary to collect this amount, I further agree to pay an attorney's fee in the sum of \$5.00 in addition to the charges thereon.

Signed,.....

When this agreement shows its teeth to seize a car, they say the car has been "Seifertized."

Chas. F. Seifert, the Secretary of the Association, is the man to whom credit for this agreement is due.

the cost to the members; but more of that later.

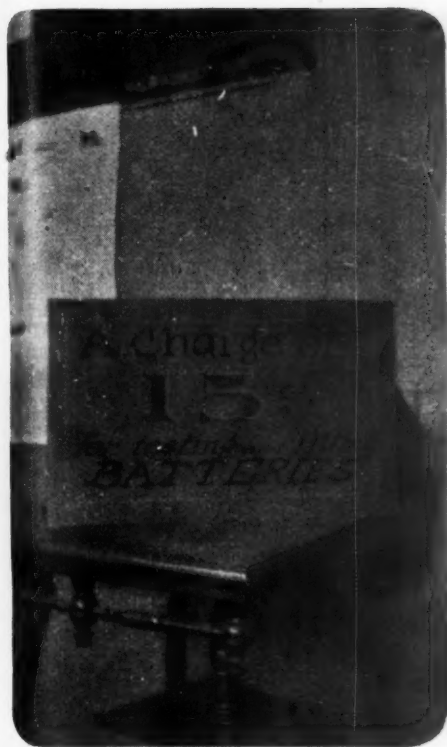
Some time ago the get together spirit was fostered by the Milwaukee fellows taking a spin up to Fond du Lac for a picnic with the battery and electrical men there. One of the Fond du Lac men said to the credit man from Milwaukee, "How do you go about forming a local association, anyhow?"

"Well," said the Milwaukee man, "You just go to the fellow across the street, or in the next block, or wherever he is, get acquainted, be good friends, and—there you are—you have formed an association. You are associating with him. You can make it as informal as that, smoke a cigarette with him and talk over business conditions that affect you both the same way, or you can hold meetings, elect a president and treasurer, and go as far as you like. Then when others join you, you have a bigger association, and that's all there is to it."

The advice must have soaked in, for before the Milwaukee crowd got to the point of putting the charge for service idea into practice, their Fond du Lac friends had jumped in, where angels dared not tread. Any fears as to results however were drowned out by the dimes and nickles jingling in the cash register.

Oshkosh dealers were not far behind in this progressive step, for, being adjacent to Fond du Lac, they were not long in sizing up the situation and deciding on the same plan.

R. H. Colburn, the Exide man, and E. L. Specht, the Globe man, were instrumental in getting the battery men of Oshkosh together. One day Colburn



Uniform signs are used so that the car owner will get the same message at all battery stations

called up Specht and presented the idea that because there might be ten battery men in town, who could be considered as competitors, it didn't mean that they had to be enemies. Then Colburn and Specht did some more phoning, the result of which was that out of the ten men, there were nine at the first meeting, and among the concerns interested in the movement there were not only the battery stations, but also the Krueger Automobile Co., dealer in Packard and Franklin cars, which handles batteries in connection with its other work.

"About two years ago," said Colburn, "If you had been operating a battery station here in Oshkosh, you would expect that every time a customer came in you would hear what your competitor thought and said about you. Knocking was then the rule, but now it is the exception, and a very rare one at that.

"No formal organization exists, but every now and then the ten representatives of the various shops get together and talk things over. We have no treasurer and no funds to treasure, so the proceedings are quite simple, and we are all realizing more and more that our problems may be solved by getting together.

The Oshkosh Association Has Cut Down Losses from Bad Accounts

"After deciding the vital point, that an association would do us all some good, we took up the question of customers being N. G. and how to protect ourselves from deadbeats. The result of that discussion is that friend Specht is the credit man, and if we have trouble collecting, we tell him all the details. Then if at any time we want to know any-

thing about a man, or what experience any of the other members may have had, we just give Specht a ring.

The charge for service idea, which since July 15th has been a reality in Oshkosh, is working out fine. To the question as to how the public take to it, the answer is invariably, "Most of them wonder why we didn't do it long ago. They are business men and know a business is not conducted by giving away things. You get a few kicks of course, but mostly from tourists or transients, and this is to be expected. The plan is not used in all parts of the country, and the tourist is always expecting to get stung when away from home. That's why some of them think we are making the charge for their particular benefit."

That a radical departure from established custom should be made without a hitch of any kind is not to be expected, so that the results reported in Oshkosh are highly gratifying.

In Milwaukee the charge for service idea went into effect Sept. 1st, and was inaugurated by those stations that could conveniently do so.

That the decision is made as a recommendation and not as an arbitrary ruling is a tribute to the brotherly spirit shown by the members attending the meeting at which the resolution was passed. The point was brought out that factory policies differed and that dealers in considering a local move of this nature must also consider the policy of the factory they represented. National advertising might be based on some plan or other which, of course, would have to be carried out by the dealers in various localities, and for this reason it was seen that all might not feel free to adopt the charge system at once.

It was also brought out however, that the constantly lowering margin of profits on batteries, together with the increase in dealer mortality, should have its effect on the way the factory would view the action. A factory without dealers would be like a car without wheels; it might slide for a while, but wouldn't run far, so it was felt that the dealers would not be alone in their view on this question.

Rentals that Never Return

The problem of lost batteries is one that has been solved in Milwaukee. Each station has its own private mark, known to other members of the association, which it puts on its rental batteries. One such battery obtained in Milwaukee was driven to Waukesha, where the car owner dropped in at a battery station, said he was camping a day or so in the vicinity and wanted a new box put on his battery.

When the Waukesha man, who is a member of the association, examined the box he saw it was a rental from Milwaukee, and immediately called the station which had supplied the battery. The answer was to the effect that the customer in question should be taken into custody by the town authorities. This was done, and the owner found that

it was no more fun to steal a battery and get caught with the goods, than if the merchandise had been any other thing of value.

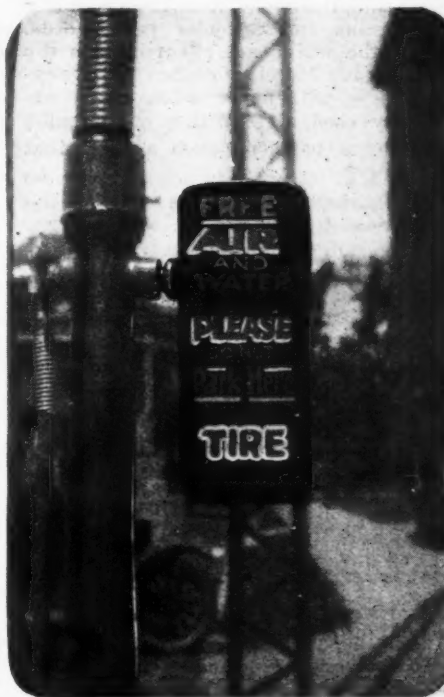
But trouble in handling rental batteries was not always confined to those who deliberately tried to get away with them. The deadbeat was just as bad or worse. He would just forget to come back, would be seen around town, but neither paid his rental charges nor came back for his battery.

This led one of the members of the association to get an attorney to draw up an iron clad rental agreement which each customer has to sign. This agreement is such that in extreme cases the sheriff may seize the customer's car, regardless of whether it has the rental battery in it at that time or not.

One such incident occurred where a truck belonging to an Italian commission merchant was concerned. The battery had been out until the rental charges had piled up to some \$67 or about four times the value of the battery. Letters made no impression and the last one sent was registered and a return card obtained to make sure it was received. Then the final gun was fired and the help of the sheriff was sought.

In Which the Black Hand Is Whitewashed

As with the moonshiners of Kentucky, the first attack was repulsed, the whole family taking part in the defense, but later reinforcements showed that the law really had teeth and knew how to use them. The truck was seized, locked up, and the business of trucking fruit ceased. Ruin confronted this worthy son of Italy and he was forced to pay not only the rental charges, but also other costs in connection with his defiance of right and justice.



Convenient air and water service at the curb should eliminate the need of a man to fill radiators and tires

One other way in which each member of the association has been benefited is in being assured that men employed as electricians really know their business, and the members in Milwaukee are particularly fortunate in having the co-operation of the School of Automotive Electricity.

Not so long ago the average shop manager would have considered an interview with a prospective workman at an end when he said he had been to some school or other, because so many schools promised so much and gave so little, that their graduates experienced most of their development in the vicinity of the hat band.

Schools are different however, even as people, and the service stations find that a student of a reputable school can be developed into an asset, after a suitable period of probationary work in the shop.

Electricians do not have to be taught at the local school but they may take an examination there, and if successful obtain a card which gives them the status of Certified Automotive Electrician, which to the shop manager means something definite in the way of accomplishment and ability.

In addition to teaching men the things that make them good electricians, the School of Automotive Electricity has recently gone a step farther by having a course for instructors in high schools and preparatory colleges where automobile mechanics courses are taught. Men in charge of such educational work may have had a ground work of electrical theory, but a great deal more is needed



Training instructors to teach automotive electricity should increase the number of capable men available for the electrical shop

In the top row the men, from left to right, are, Robert J. Grant of the Appleton high school, Otto W. Hasse of the Waukegan township high school, O. E. Sandberg of the Racine high school, J. T. Baker, Instructor at the School of Auto. Elec. In the bottom row the men, from left to right, are, Frank Cerveny of the Jonesville high school, Fred J. Ruckweed, Instructor in Mathematics, Physics and Shop Work at Gettysburg, S. D., A. L. Sudduth, Instructor at the School of Automotive Electricity. At the extreme right, E. L. Consoliver, Director of the school

before they are competent to teach the subject so that it may be used practically on automobile electrical systems.

The training of additional instructors, should relieve the shortage of competent men, not only in Wisconsin but in other states as well, where there are schools properly equipped for this work.

The spirit of cooperation in Milwaukee, not only between the so called com-

petitors but between them and the school, is interesting to see and the facilities of the school are available for settling disputes between a shop and its customers.

Problems arising from difficulty with customers and employees confront every shop and service station, and if every association is solving them as well as the Automotive Electrical Association of Wisconsin, it is doing a worth while job.

Remy Replacement Cutout

WHEN it comes to checking up actual accomplishments it is always found that actions speak louder than words, even if the words are shouted from the house tops. Merely talking about genuine parts will never make them extensively used, but putting out genuine replacement parts on such a basis that they can be easily stocked and can be profitably handled will accomplish the desired result.

Changes in design of electrical equipment from year to year has been a characteristic of practically all of the concerns making starting, lighting and ignition equipment and this has made it nearly impossible for any but the very largest establishments to carry a complete stock of electrical parts.

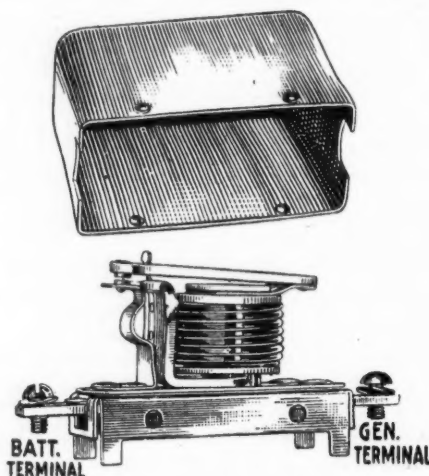
That a step in the right direction has been taken by the service department of the Remy Electric Company no one will deny for in reducing their replacement cutout requirements to one cutout and a few base plates easily attached, they have really done something.

The cutout itself together with cover is shown in Fig. 1, while Fig. 2 shows the various styles of base plate which may be easily attached. Fig. 3 shows the method of attaching a base plate by bending over the projection in the cutout base. A drop of solder added at each one of the projections then make

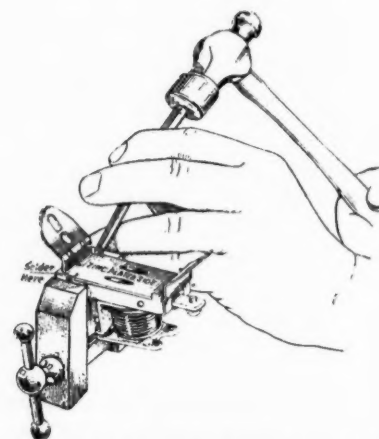
certain a good ground connection for the shunt winding.

This cutout relay with base plates is packed in individual cartons together with a car application list and complete instructions for assembling. The car application list gives some 104 cars and

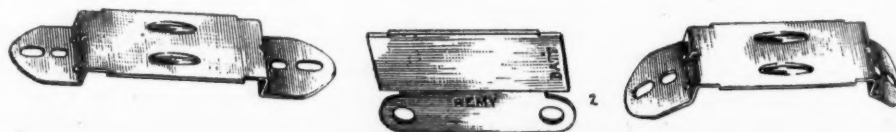
trucks ranging from 1917 to 1923. The model number of the Remy equipment together with the number of the original relay is also given on this application sheet and these relays may be obtained through the regular Remy service channels.



A genuine Remy replacement cutout



Installing base plate on the cutout



Different base plates make the cutout suitable on a variety of cars

23 Years Ago This Week In Motor Age

(From MOTOR AGE of Sept. 20, 1900)

THE INTER OCEAN TOURNAMENT

(Excerpts from the interesting story of a notable event at Chicago which attracted many men who have since become well known in the automotive world.)

Slow to Open

The much heralded exhibition and tournament of the Chicago Inter Ocean opened at Washington Park race track on Tuesday morning amid chaos. The exhibitors had been informed that they must have their exhibits in order on Monday evening, at the latest. When darkness put a close to operations that night, there was just one booth that was any approach to complete and that was the one of the MOTOR AGE.

* * *

Racing Chief Attraction

Most of the contests on the track—a magnificent trotting track, but not banked sufficiently to allow the really fast vehicles to speed to their limit—lacked interest the first day, either on account of lack of entries, failure of the entrants to put in an appearance, or because some one vehicle entirely outclassed the others in the race.

* * *

But This Was Exciting

But if the earlier races lacked excitement, the 10-mile event, open to all classes of vehicles, made up for it. As might have been expected, there were no starters among the advocates of electricity and there were but two steam entries, T. E. Griffin and H. S. Elsselstyn with their racing Locomobiles. Alexander Winton was on hand with his gasoline racer, and President Eddy of the Chicago Automobile Club also in a Winton. Besides these there were Kenneth A. Skinner with a French De Dion tricycle, Ridgeway on a similar machine but with a smaller motor, and Albert Champion on an Orient tricycle fitted with two Aster motors.

* * *

The Standing Start

The machines were sent off from a standing start, the two Winton engines

running wild while waiting for the signal to start. When the pistol sounded, the little Locomobiles started off with a rush, leaving the other vehicles far in the rear. Winton on his racer was the next to get under way, followed by Eddy. The tricycles were left in the rear for the first 300 yard and their riders appeared to the crowd to be hopelessly outclassed.

* * *

At the end of the first mile which was ridden in 1:44 1/5, Champion was first



ALEXANDER WINTON

In his Winton racer in which he won the 10-mile open race in 16:02.

by five yards, the Loce second, Winton third, Ridgeway fourth and Skinner fifth.

* * *

During the running of the fifth mile, Champion got in trouble with his machine. Coming down the home stretch at a 25-mile an hour clip he was trying to find out what was the matter, and Winton and Skinner were gaining rapidly. The Frenchman (Champion) led under the wire, however, while the other two were almost a dead heat for second place, with Skinner a trifle in the lead. It was some time before Champion got

his machine going at full speed again and when he did it was too late to do him any good. Winton and Skinner were having it out between them, passing Champion in the first quarter of the sixth mile. The five miles were done in 7:57.

* * *

An Exciting Finish

Starting on the ninth mile Winton swung somewhat wide on the first turn and allowed Skinner to pass him on the pole and when the two had straightened out on the back stretch, the tricyclist was in the lead by four or five yards. Going into the wind, Winton gained and when the last half mile was reached he was in front with Skinner taking the benefit of his pace. Rounding the last turn, Winton swung a little wide, as usual, but not quite as much as previously. Coming into the home stretch for the last time, he had a lead of five yards. Skinner was on the pole and attempted to pass, but changed his mind when he saw the big machine closing in, as it had a right to do by virtue of its lead. The tricyclist then went to the outside and crept up on the big four-wheeler, inch by inch.

The crowd began cheering enthusiastically as the two thundered down the long quarter-mile stretch. Seats were a drug—except to stand on. As the two chauffeurs approached the wire, the enthusiasm knew no bounds. Skinner was gaining, but all too slowly. While the spectators held their breath, the two dashed past the finish, Winton in the lead with Skinner's front wheel a foot ahead of his opponent's rear wheel. The tricyclist lodged a protest with the judges, but it was not allowed.

Winton's time for the 10 mile was 16:02.

"23 Years Ago This Week" is a regular feature of MOTOR AGE, consisting of verbatim reproduction of interesting items which were printed in the corresponding issue of MOTOR AGE just exactly 23 years ago. Some of the early history of the industry is found in these items.

DOING ONE THING WELL

IN the majority of cases the manufacturer of a product knows, or should know, more about that product than anyone else. The motor car maker certainly knows the ins and outs of his car as well as anyone and this also is true of makers of other apparatus, such as automotive equipment makers.

The concern which brings out a certain piece of equipment has spent a lot of time and money experimenting with such equipment before placing it on the market. Therefore, when a shop buys such equipment it is well to follow the maker's directions as to how to use that equipment.

We recall a case where a mechanic tried to do a job of burnishing a set of cylinders. He used a certain liquid for the work but got poor results. He condemned the process as no good. He simply had not followed directions as the maker plainly had stated to use the liquid in combination with kerosene.

No mechanic should throw away the maker's directions for installing accessories, as very often these accessories require a certain kind of treatment in their installation. Many "mysterious" cases of trouble with motor vehicles are simply the result of some one's not fol-

lowing directions. An instance of this was evident not long ago when a case of "engine trouble" was traced to a poor installation of an automatic windshield wiper, which worked by suction from the engine.

A certain carburetor requires cleaning and polishing of one of its parts occasionally and the maker plainly states that under no circumstances must emery cloth or sandpaper be used for this. Silver polish or metal polish is specified and yet, every now and then you will find a mechanic disregarding these directions. Then trouble follows, and all because someone did not stop to read directions carefully.

Something for the Car for Christmas

or

Perhaps a Family Car for Christmas

DEALERS who expect to share in the Christmas trade in automotive accessories should be getting their plans under way at once. The time is getting short and it takes planning to reap the real harvest.

Last year's experiment of the followers of the Automotive Equipment Association was a hurried effort, none too well understood by those who participated, but it was an earnest effort and was entirely sufficient to prove that the idea is a profit and sales increasing idea.

Only a small percentage of the dealers were prepared to carry out the idea to any extent, but a large number of dealers in the larger cities decorated Christmas windows and profited handsomely by so doing.

Just as a thought must be started in any line of endeavor, last year's effort was most profitable in that it did turn the public to thinking of automotive merchandise in the terms of Christmas gifts.

This year the door is wide open. The Automotive Equipment Association is again behind the movement and the Merchandising Committee of the A. E. A. has gone so far as to develop a merchandising film on this idea. This film is now traveling over the country and is enthusiastically received where shown.

The actual work on "Something for the Car for Christmas" began at the A. E. A. meeting in June. As soon as the membership of the A. E. A. had put their



Xmas merchandising aids are available for every dealer who is alive to the advantages of the Xmas appeal

stamp of approval on the report of the Committee, Merchandising Director Mogge and a number of manufacturers began a search for boxes and other needed holiday material. Then they found that as early as the A. E. A. had started its work, most other Christmas merchandisers were ahead of them and it would not be easy for automotive accessory manufacturers to obtain the holiday boxes and wrappings. And so the jobbers and dealers are going into

this Christmas campaign without as much help from the manufacturers and jobbers as the manufacturers would like to give them.

Next year it will be different, for some manufacturers of especially attractive articles for Christmas giving are already planning on the 1924 Christmas campaign.

On learning the results of the manufacturers' efforts, a good many jobbers went into the market to pick up what they could of ready made holiday boxes, and wrapping materials to assist the dealers. They have not been able to get their wants supplied as fully as they would like. So the situation will put up more of the Christmas preparations to the dealer for 1923 than was the program.

So it is time for the dealers to be making a survey of the possible assistance they can get from manufacturer and jobber and then do some work for themselves. It should be comparatively easy for the dealer to obtain some holiday paper for the special wrapping of a few packages and anyway, the dealer should supply his own window trim, his own Christmas tree and do some of the work. If a dealer should lack ideas, the jobbers salesman is ready to supply them.

In picking up this idea of "Something for the Car Christmas" the A. E. A. has picked up an idea that the automobile dealer always has neglected, much to the surprise of his competing merchants.

Every piano and talking machine dealer in the country has for years depended upon his Christmas trade to put the big punch in the year's business. Always just before Christmas it is difficult to buy a piano or a talking machine, because those on the floor are sold for Christmas delivery.

The same upward tendency is shown by the sales curve of furniture stores and other merchandising establishments that sell family supplies. Already you will see hints in piano, talking machine and furniture advertising of these articles for the family Christmas.

Christmas has never brought much of a selling boom to the automobile dealer, chiefly because he has not encouraged it.

Some brave men and women have defied the coldness of the automobile merchant and have insisted upon buying cars for husbands, wives or children for Christmas, but these have been comparatively few. Around Christmas time people are generous in their feelings towards others, and they hesitate to intrude upon the automobile dealer who has withdrawn into his winter shell.

It is true that during the last few years there have been some handsome



This is how Willys Overland, Ltd., Parke avenue and Sherbrooke street, Montreal, utilize the Xmas slogan

automobile Christmas windows, but these came after the piano or dining room set had been decided upon.

Everywhere in this country there are Christmas funds, some of them fostered by banks, some by industrial organizations and some by Christmas Fund Societies. In many of these the fund accumulated by the average depositor runs considerably more than \$100. It is not unusual to find families that take from these funds as much as \$500.

Most automobiles are family institutions. In thousands of cases the young folk of the family are really buying the car. It would appear that these Christmas fund savings were especially designed to enable many families to make their first payment on a car. Certainly, if the proposition was put to these families before the money was already mentally spent, thousands of dollars from such funds would go into a car. If the fund was not quite sufficient, it would be deposited with the automobile dealer and a few more payments made by spring and spring delivery made of the car.

It looks as though the automobile dealers of the country could well take a lesson from the accessory merchandising.

Christmas buying is always a spending orgy. Thousands of people with money in their hands, run around trying to think what they can buy for father except slippers, ties and shirts. All these people need is a suggestion. Make your suggestion early, so that it can sink in.

Certainly it is time for every dealer to learn from his favorite jobber's salesman just what assistance he can expect, or he can communicate with the Merchandising Committee of the A. E. A., City Hall Square Building, Chicago, and get his information from Merchandising Director Mogge's office.

The Merchandising Committee has had designed a number of one and two column cuts suitable for newspaper and catalogue work that are to be sold at extraordinary low prices for accessory or automotive dealers who may care to use them.

Also the Committee has had designed a number of cartoons, special gift enclosures, large display signs for the win-



Enjoyment of winter motoring, aided by the right kind of winter service, was suggested by this display by the Platt-Fawcett Motor Co. of Denver, Paige distributor for Colorado and adjacent Rocky Mountain territory, where winter motoring is growing in favor

**GIVE SOMETHING
FOR THE CAR
THIS CHRISTMAS**

**A Merchandise or
Service Certificate
Makes an Appreciated
Christmas Gift**

Arrangements have been made for the Curtis-Johnson Printing Co., Chicago, to supply these and other Xmas window cards

dows and many other holiday shopping helps that will be distributed at actually wholesale cost.

Some stocks of holiday boxes have been found and addresses of these firms are given.

A "broadside" circular giving the details on a lot of these articles is being distributed by the Merchandising Committee and if you have not received yours, write for it.

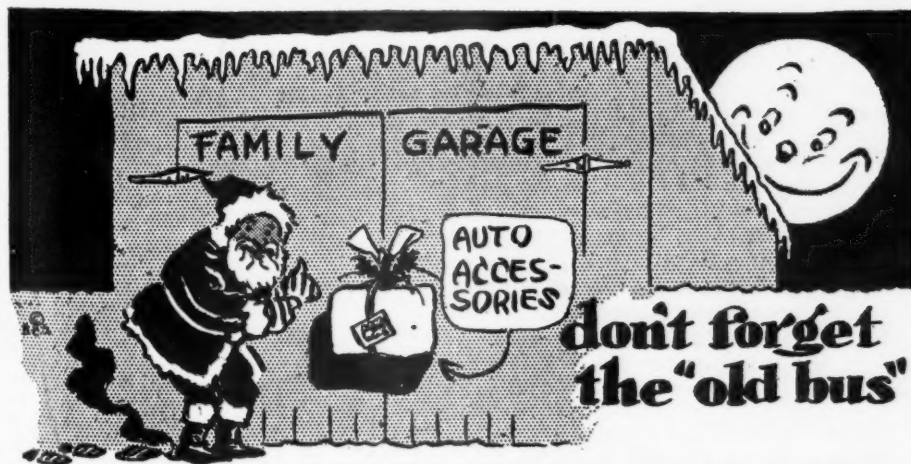
Lest You Forget

YOU who fought the fight superb that a Nation's ideals might not perish; you who forged into flaming steel the ammunition for the battle lines, think back a little. Close your eyes and remember—Chauteau Thierry, Verdun, the Argonne—a thousand familiar names—hundreds of wounded men. See then another vision—a factory where toiling men slaved day and night to furnish arms for heroes. If you belong to either classes the worker or the fighter—you must not forget.

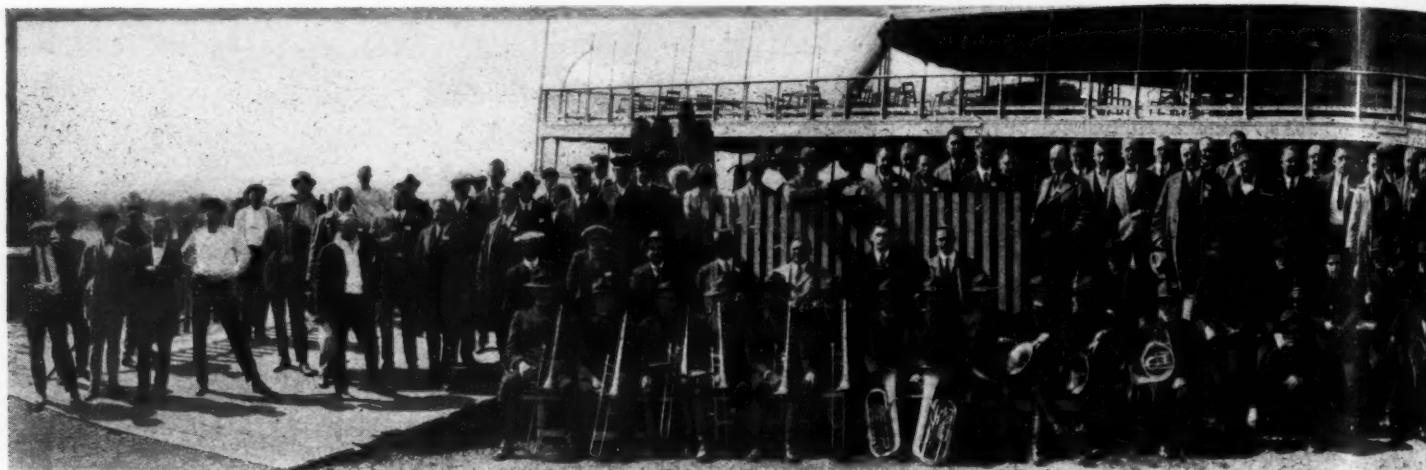
The American Red Cross will help you to remember through the Seventh Annual Roll Call, November 11 to 29, these disabled ex-service men and their families. The Red Cross remembered them last year to the extent of \$8,000,000. It never wants to forget them, especially those who lie even now in government hospitals and need the personal service which the Red Cross renders.

By contributing your dollar for membership you will help to make the dream of health and happiness for every wounded soldier, sailor or marine in the United States a reality.

When you realize what the Red Cross is doing for these men, surely nothing can keep you from adding your name to the Roll Call.



Cuts for special catalogs, circulars and newspaper ads can be procured from the Business Cartoon Service, Chicago



Michigan Dealers Hold Summer Meeting on Lake Boat

Fun and Serious Conferences Merged in Day's Ride. Members Vote to Hold Similar Meetings in the Future

AT the close of a near perfect day, the members of the Michigan Automotive Trade Association, on the good ship "City of Toledo," voted for more summer meetings of that organization. This was the first "summer" meeting and the dealers present liked it.

They had left Detroit at 10 o'clock Monday morning on a chartered boat, had sailed for Put-in-Bay, held a meeting en route, enjoyed a buffet lunch on the boat, devoted an afternoon to sports at the almost vacated summer resort, partaken of a most excellent shore dinner, and sailed back to Detroit in the evening, holding another short meeting on the boat.

Perhaps the best feature of the meeting was that the dealers divided into groups and talked business methods going and coming and there was little to interrupt, as the excellent music dispensed by the Studebaker band, from the Detroit factory, was conducive to restful and interesting thoughts.

There was not much in the way of a program, as the day was planned by W. D. Edenburn, manager of the Association, more from the social viewpoint than as the usual sort of a meeting. Edenburn, and the members agreed with him, held that the annual meeting held at another date was quite sufficient as a studious meeting.

Only two speakers were on the regular program. Before introducing these speakers, President W. K. Philp spoke briefly on the accomplishments of the M. A. T. A. during the last session of the legislature, reciting briefly some of the bills that were defeated; the relief of \$1 per car on the used car tax, and the new service that is being extended to

all members in the listing of the new car licenses as they are entered with the Secretary of State.

He asked that the members present go to their fellow dealers and explain to them what the M. A. T. A. is doing and urge upon them that they should carry their share of the burden in not permitting the automotive dealers to be legislated out of the business and a great sales resistance to be built up against the ownership and use of automotive vehicles.

Clyde Jennings, editor of *MOTOR AGE*, was assigned the subject "Trade Outlook and Influence of Service and Sales." Jennings said that recent business reports and other methods of looking with more or less certainty into the future, indicated a continuation of business on the high level and it was not possible for the automotive business to slump with other lines going forward at the high speed.

As to the "Influence of Service on Sales," Jennings took the position that service or maintenance was the factor that made profits on new cars possible, in that a properly managed service department, with maintenance properly sold at adequate prices, would contribute much to the carrying of the overhead of the establishment, and permit the sales department to care for only the sales expense.

Jennings advocated a stronger effort on the part of the dealer to supply as much as possible of the maintenance, accessories and tires for the cars that he has sold and then to build his shop large enough to take some of the maintenance on cars that happened to be orphans in his neighborhood, with a view of selling the car he represents to these orphan car owners when the time comes.

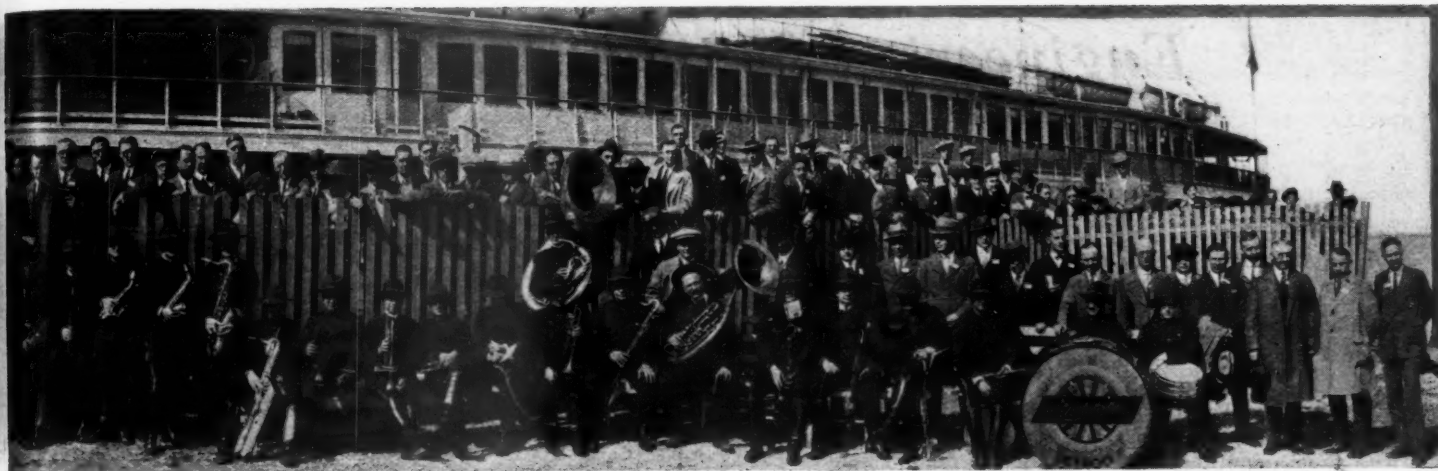
An "orphan" car in this sense, being a car that has no dealer representation in that community.

Wayne Hearne, a sales engineer of Chicago, was the other speaker. Hearne's subject was "Our Old Friend, Used Car Merchandising" but he served notice early in his talk that he considered that "used cars" was a closed subject, that he had previously spoken on this subject to the M. A. T. A. members and that he had said all that he knew on the subject. He said that his investigations indicated that the situation was much better; that no "plan" was remedying the situation but that through plans and education, the dealer was coming to know that he must buy merchandise at a lower price than he sells it.

Then Hearne launched into what really became his subject; an attack on the practice of paying salesmen on a strict commission basis. He declared that a salesman paid only by commission was in reality only a broker, and would never be anything else. That his sole mission was that of bringing the buyer and seller together and that when such a "broker" was sent out to negotiate for a used car, that the dealer was sending a seller instead of a buyer out to buy something for him.

In private conversations with dealers later, Hearne made it clear that he favored the weekly wage and bonus system, a modification of the commission. One of the points that he made strong in his comment was that when a dealer was paying a salesman a regular wage, he would be a lot more careful in employing his men.

On the return trip a short session was held at which George A. Bond, secretary



of the Kansas City Motor Car Dealers' Association, made a short talk on the needs of an association, in which he told how the Kansas City Association had brought about proper legislation, had defended an attack upon selling automobiles on terms and had generally made conditions better.

John C. Munn of Toledo, talked briefly on the need of the automotive merchant knowing his territory better and cultivating it more closely. Edensburn gave the members an indication of some of the

work that was before the state association.

It was significant that throughout the day there was a report of better co-operation between dealer and factory and of a better feeling existing in the automotive field.

The following are the officers of the M. A. T. A.

President, W. K. Philp, Grand Rapids.
Vice-president, W. P. Staebler, Ann Arbor.

Treasurer, L. H. Saunders, Detroit.

Secretary, H. H. Shuart, Detroit.

Manager, W. D. Edensburn, Detroit.

The day was ideal for such a trip, sunny and cool, but it followed a very uncomfortable Sunday which doubtless cut down the attendance. Everybody was pleased with the physical comforts and the music was donated by the Studebaker plant. The dealers supplied their own amusement and enjoyed it greatly. They played ball, blew toy balloons, ran races, pulled a tug of war and had a good time generally.

McQuay-Norris Flat Rate Plan for Reconditioning Engines

STANDARDIZED plan for the reconditioning of automobile engines on a flat rate basis has been worked out by the McQuay-Norris Mfg. Co. of St. Louis, manufacturer of pistons, piston rings, piston pins and other automotive parts.

The company announces that it will establish the plan on a national basis, authorizing service stations and shops which use its products and perform satisfactory service to operate as a part of nationally advertised system. The system is designed especially to enable small shops to operate on a plan similar to those which have been designed by many motor car manufacturers for their service stations.

The quoting of a flat rate for the operation is an important part of the plan. No attempt has been made to establish a flat rate that would be applicable to all sections of the country, but the McQuay-Norris engineers have worked out a flat rate basis for a large number of automobile power plants and jobbers' salesmen will be able to adjust these to varying labor and overhead costs and fix individual flat rates for particular communities.

The standardized engine reconditioning operation includes the following:

Reconditioning cylinders, taking out taper, out-of-roundness and removing all irregularities of wear.

Furnishing and fitting Leak-proof and Superoyl piston rings.

Furnishing and fitting leak-proof and Superoyl piston rings.

Furnishing and fitting new gaskets.

Grinding and seating valves.

Removing carbon.

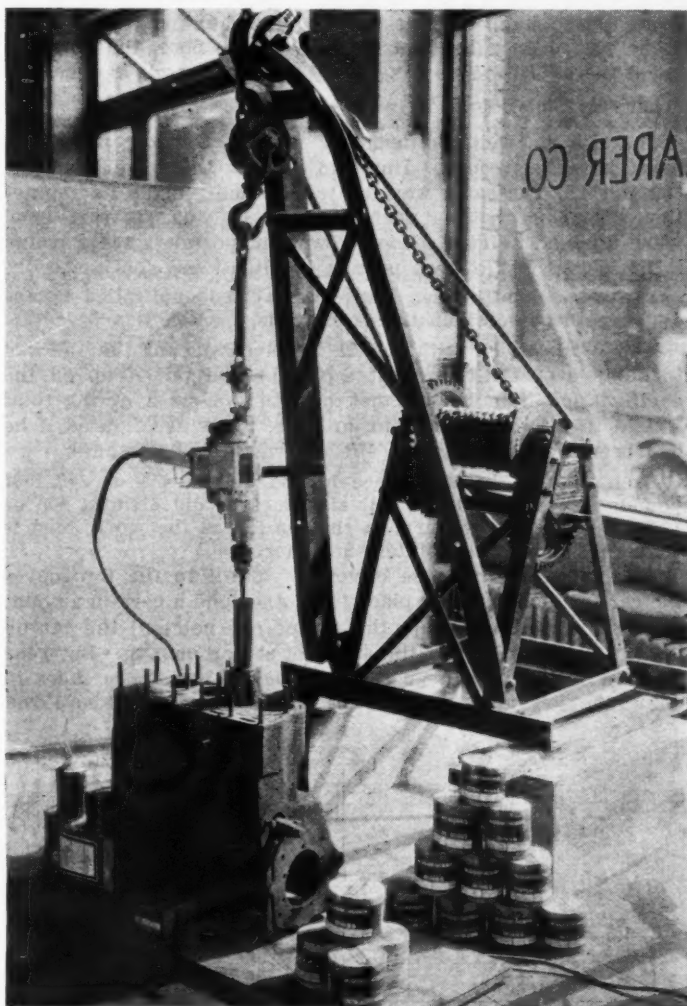
Tightening bearings.

Cleaning and adjusting for perfect carburetion and timing.

Quoting customer a flat price for the job.

Uniform signs will be provided by the McQuay-Norris company to be displayed by shops operating under this system. The use of this sign will be jealously guarded and any shop failing to maintain a satisfactory standard of work will be denied the right to use it. There will be no restriction on the number of shops in a town which may operate under the system provided they are qualified to maintain the standard.

The company insists that shops operating under this plan must be properly equipped to perform the various operations. This means that they must have tools to regrind, ream, rebore, lap, hone or burnish cylinders. The company does not insist



upon any particular one of these methods of reconditioning cylinders. Such other equipment as is necessary to enable the shop to operate profitably on a reasonable flat rate charge will be recommended.

Engineering for the Service Man

No. 5

Gear Ratio, a Mechanical Convenience, Not Something for Nothing

A FARMER'S boy, who should have stayed that way, wrote to us, "I have put five to one gear ratio in and get 50 horse power out of a 10 horse engine." A clever chap. He should change dollar bills to get five spots out of them.

* * *

Willie Lean was the stock boy for a tin can factory. He lived up to his name and you could reach around his biceps with thumb and finger. To the tin can factory solder was as non essential as powder to a shot gun or a chorus girl. Solder came in 300 lb. billets and Willie was just as capable of sling-ing solder billets as he was at lifting himself by his boot straps.

Then a change took place. Not only in Willie's place, but in other places, a reduction of weight in individual billets was found to be desirable and some executive, whose hat support did not assay 100 per cent elephant tusk, made arrangements to have 50 lbs. standardized as the unit weight. Willie could sling these around, not without some effort, but the fact remains it could be done, while before it was asking the impossible.

Whether work is done by a 100 horsepower engine or by a stock room boy, the fact remains that its value lies in the accomplishment, not in the exact means by which the job is done. It so happens that if a 300 lb. chunk of solder were to be placed on a bench 4 ft. up from the floor, the job is to get it there. How it is done does not matter, so it is done.

What's A Foot Pound Anyway?

That 300 lb. weight lifted 4 ft. means 1,200 foot pounds of work have been done. How did we get the 1,200 from the 300 and 4? The same way the rabbit family made its reputation. That means that a foot pound of work is performed when a pound is lifted a foot. Two foot pounds when a pound is lifted two feet or two pounds are lifted one foot.

The work done is then the force exerted, multiplied by the distance through which the exertion is necessary.

Now Willie's job with the 50 lb. pieces meant that he had to stoop over six times, lift a weight and put it up on the shelf. Each time he did that he had one-sixth of the total weight to lift, but he had to do it six times as often as if he had been strong enough to lift the whole 300 lb. chunk.

Each time he lifted a piece he did 50 times 4 or 200 foot pounds of work, and doing it six times he did 6 times 200 or 1,200 foot pounds of work, so that as far as the work done is concerned there is absolutely no difference.

Driving a car from the bottom of a hill to the top moves the car from one definite place to another and a certain amount of work is done. Perhaps the engine can not pull the car up in high gear, for, like Willie, it is not strong enough. But gear it down so that it can go through the motions more times in doing the job, and you will get the car up there where you

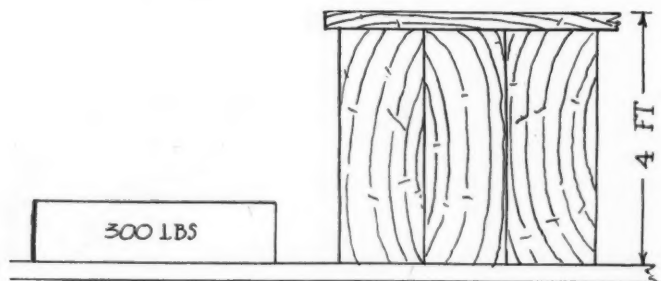


Fig. 1

Lifting a 300 pound weight up onto this bench is a man-sized job

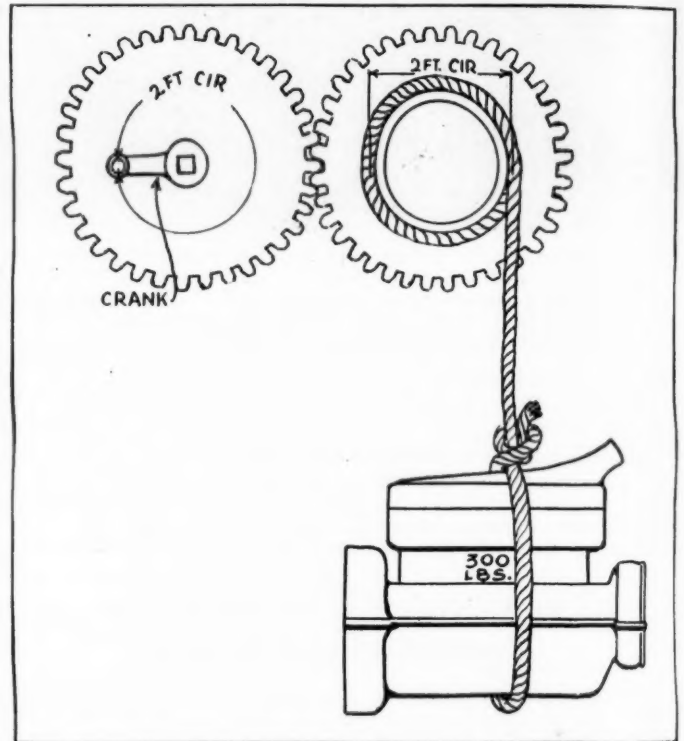


Fig. 3

A one to one ratio in these gears makes the job as hard as a straight lift

want it. There is no increase in power, but there certainly is a rearrangement of the work so that it is possible to get the job done.

Another illustration of the way a small force can be made to do a large amount of work is shown in Fig. 3 and Fig. 4. In Fig. 3 we have an engine weighing 300 lbs. and we are attempting to lift it with a drum and rope, actuated by a pair of gears and a crank handle. In Fig. 3 the gears are the same size so that when the handle of the crank is rotated once, the drum which carries the rope will also turn once.

Now we have assumed that turning the drum once lifts the engine 2 ft. and that in one turn the handle of the crank also travels through a two foot path. The distances being the same we find that neglecting friction, the force exerted at the handle of the crank will have to be the same as the weight lifted or 300 pounds.

Not many of us are capable of turning a crank when a

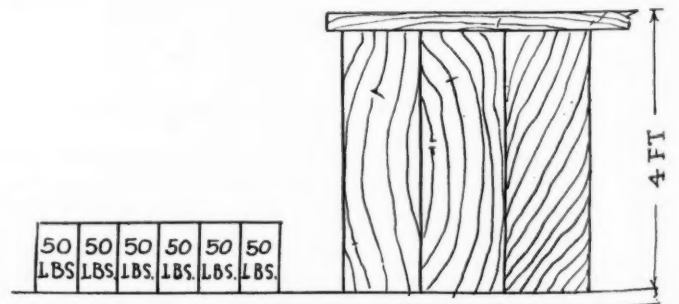


Fig. 2

With the weight split up into 50 pound pieces a boy can do the work

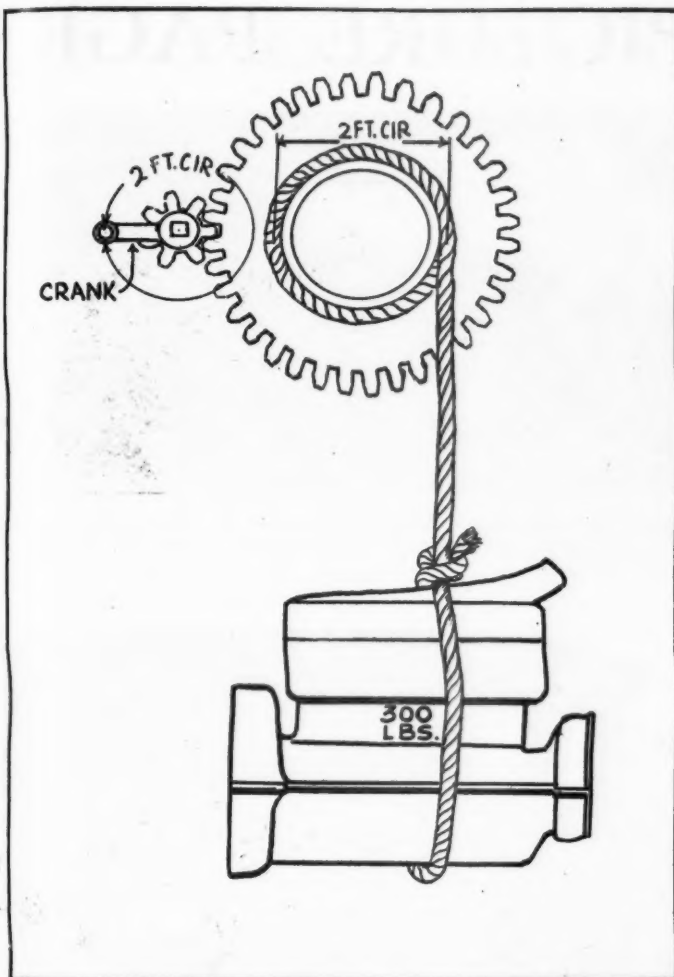


Fig. 4

This five to one gear reduction makes it possible for a boy to lift 300 pounds

force of 300 pounds is required. However, in the illustration of Fig. 4 the job would not be so difficult. Here we have seven teeth in the small gear or pinion and thirty-five in the large gear. This means that to turn the large gear once, we will have to turn the small one around five times in order to make 35 teeth go by. Then instead of the crank handle being pushed for two feet we will push it around through a path 10 ft. long, for we go around the two foot circle five times.

Then by our general rule that the measure of the work done is neither in the weight nor the distance but in the product of the two, we find that moving five times as far requires but

one-fifth the force, so that 60 lbs. applied at the crank handle will now do the job.

In the same way a gear ratio in the rear axle of an automobile, combined with various ratios in the transmission, make it possible for the engine to push the car under varying conditions.

In Fig. 5 we show diagrammatically a simple car where all details have been omitted except a simple connection between the engine and the rear wheels, and we also show that in the rear axle we have a one to one ratio. In other words the axle gears are the same size so that one revolution of the engine produces one revolution of the rear wheels.

Suppose, for example, that a force of 100 lbs. is required to push the car and that one revolution of the wheels moves the car 10 ft. Then the work done in moving the car 10 ft. will be 1,000 foot pounds. We will further assume that the average force that the engine is able to exert on the crank through one revolution is 100 lbs. and that the stroke is such that the crank pin travels through a circumference of 2 ft., each revolution of the crank. The engine is then able to do work amounting to 2 times 100 or 200 foot pounds each revolution.

Under the assumption that the car requires 1,000 ft. lbs., however, we would find the engine would not be equal to the job. In Fig. 6, however, we again show the same car, but now we have shown that in the rear axle one of the gears has five times as many teeth as the other so that the engine now turns over five times to make the wheels turn once. This means that the engine will do 1,000 foot pounds of work, which is exactly what is needed to propel the car 10 ft. The engine is no more powerful than before, but we have its effort conveniently used so as to suit our purpose.

What Is A High Ratio?

A high ratio means that we get a large number when we divide the number of teeth in one gear by the number in the other. In Fig. 4 when we divide 35 by 7 and we get 5, which is fairly high ratio if considered from the standpoint of the average rear axle. In Fig. 6 we have a similar high ratio. In Fig. 5 we have the same number of teeth in each gear so that the ratio is one.

High gear ratio, however, does not mean the same as high speed.

If the engine of Fig. 6. were able to have the one to one ratio of Fig. 5, we would get the car to go five times as fast, IF the engine could stand up under the strain and produce five times the turning effort. In most cases it cannot, and the effort to get higher speed with a lower ratio (often wrongly called gearing it up), is frequently a failure, unless some changes are made in the engine at the same time to give it more turning effort.

The mechanic who says, "I geared her up for high speed," really means that he put in gears having a lower tooth ratio, taking out the standard four to one gears, perhaps, and putting in three to one. Of course he has geared it to get higher car speed, IF the engine can continue to turn up the same R. P. M. that it did before, when its job was easier.

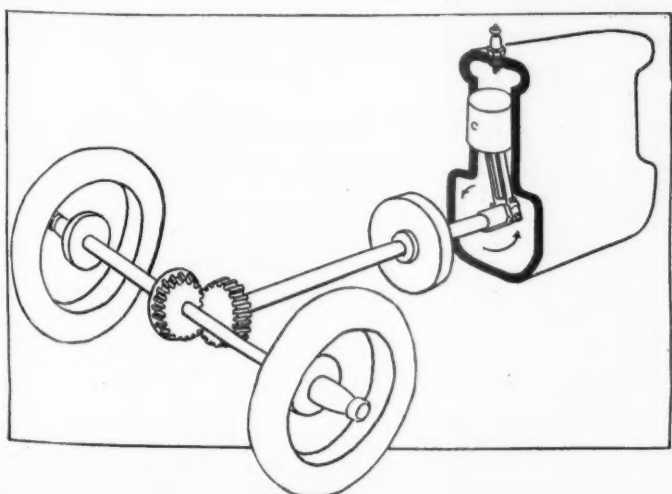


Fig. 5

With one to one gears in the axle this engine will be unable to pull the car

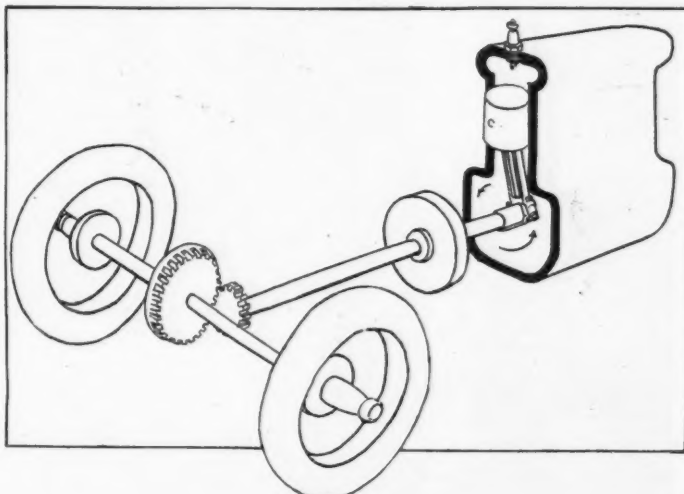
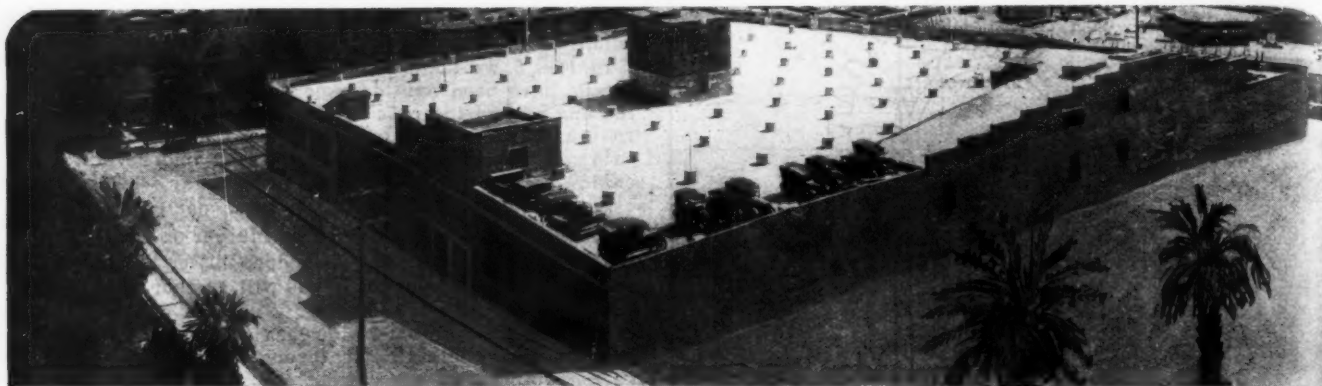


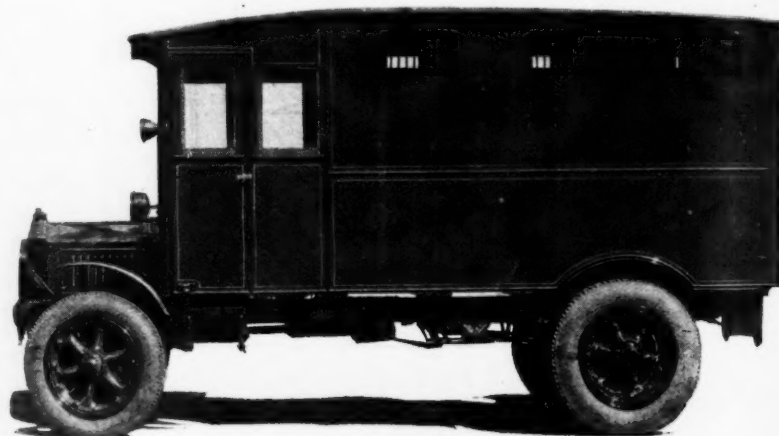
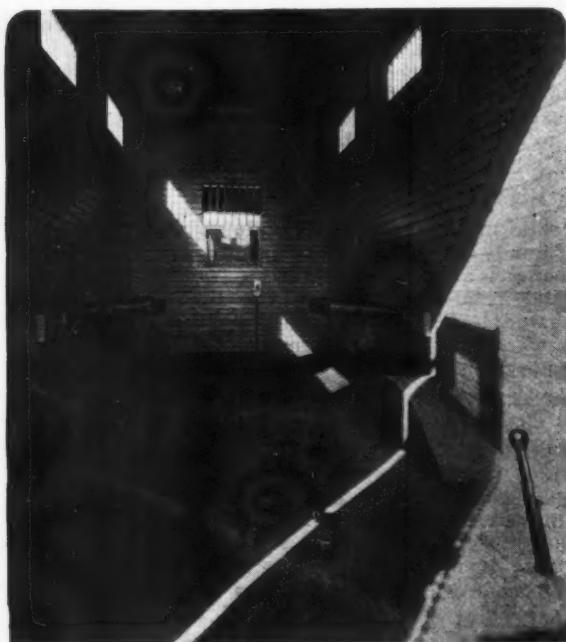
Fig. 6

With five to one gears the engine gets enough leverage to handle the load

MOTOR AGE'S PICTURE PAGES



"Oh, I haven't the time to go out now." When a prospect so responds to a salesman's suggestion at Harold L. Arnold, Hudson and Essex dealer in Los Angeles, he is invited to take the elevator to the roof, where a preliminary demonstration may be had on its expansive area



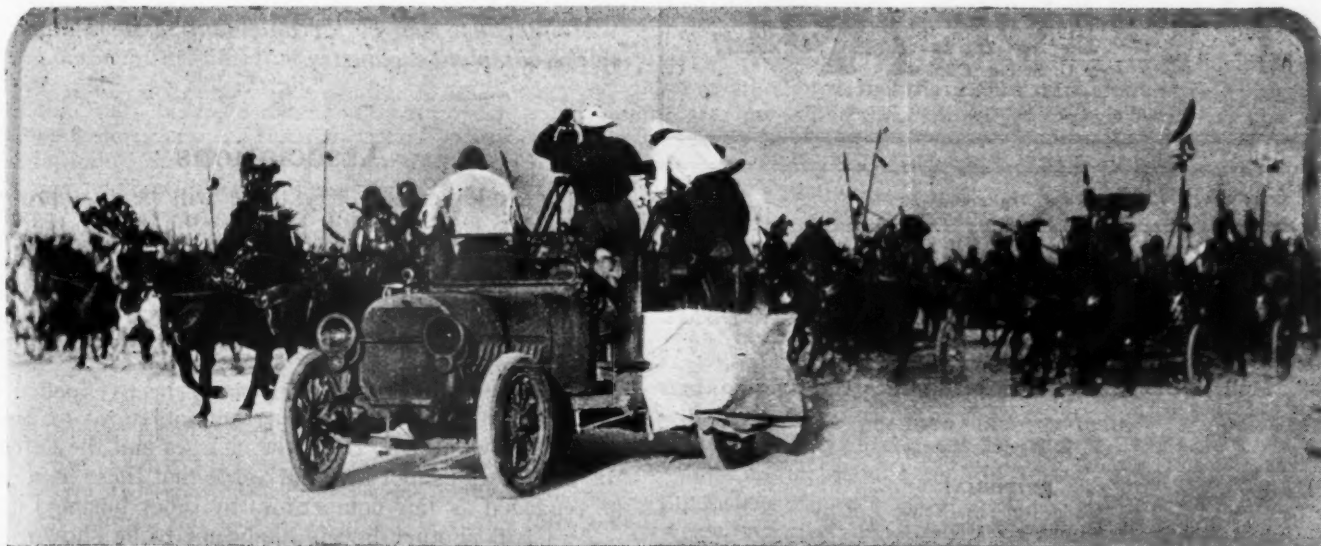
A Standard pay car recently was purchased by the Department of Street Railways, City of Detroit. The body is mounted on a special 2½-ton truck chassis and is used by the Detroit municipal owned railroads to transport the daily money receipts from the various carhouses to the banks and vice versa. The body is completely armored with special armor plate steel. The glass employed is bullet proof



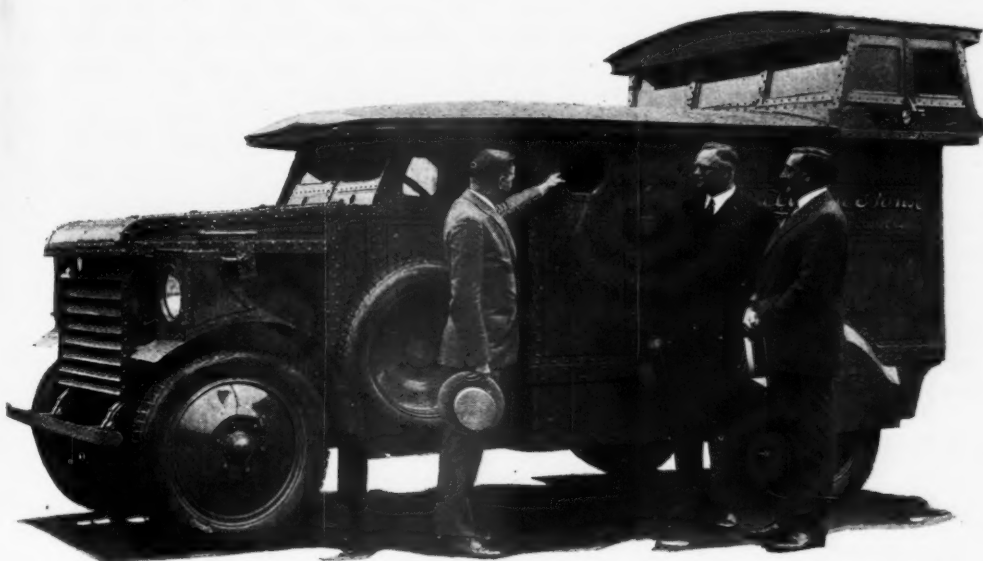
Garage door that opens and closes by merely pushing on electric button. The door is made so that when closed it matches with the rest of the house structure, entirely disguising the garage which then appears part of a modern house



OF AUTOMOTIVE INTEREST



High-powered automobiles provided the means whereby it was possible to film the largest charge of chariots. The charge took place over miles of the Mojave Desert, Cal., and was a feature of Cecil B. De Mille coming picture, "The Ten Commandments." The two hundred and fifty chariots were driven by soldiers of the 11th Cavalry

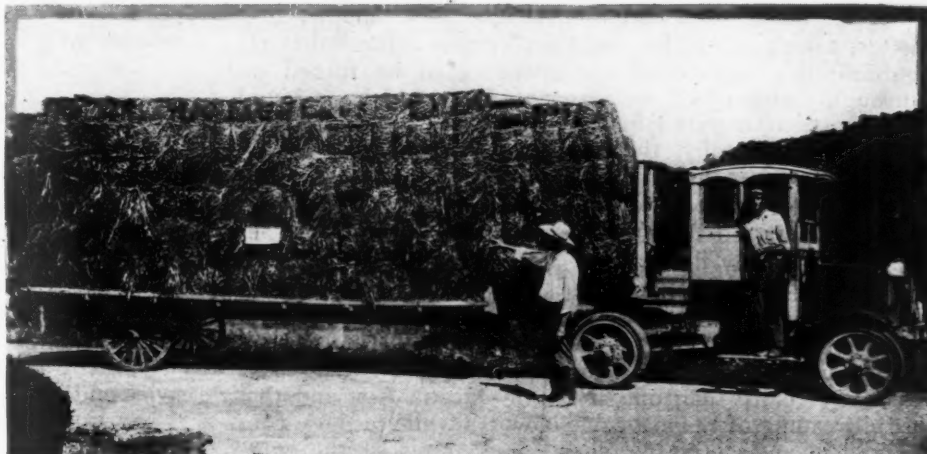


Armored money car built by Hellman Commercial Trust and Savings Bank to resist attacks by payroll bandits. Car weighs 5000 pounds, costs \$6000 and is constructed of 1/4-in. riveted armor plate steel, with special government tested glass at front and sides. Figures in foreground are Irving H. Hellman, vice-president of Hellman Bank, who designed the car, and Sheriff William Traeger of Los Angeles



Roy D. Chapin, President of the Hudson Motor Car Company, Detroit

They move hay in Illinois direct from the field to the metropolitan market. Powerful motor trucks which have a capacity of six to seven tons are loaded at the farm hay press and then move to the city in about the same time that would be consumed in packing the load in box cars



MOTOR AGE

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Quick on the Trigger

WE want very much the man who thinks of a thing and then acts. The only danger is the man who acts too quickly and there are so many more who think and never act than those who act too quickly, that this danger is negligible. But here is one case in which the man acted too quickly.

A MOTOR AGE subscriber read the lead article in a recent copy of this magazine and was so impressed by a reference to the flat rate that he sat right down and wrote a letter, asking where he could get certain information regarding this method of operation. Had he turned on through that copy of the magazine he would have found his question answered in an article that required several pages. Incidentally, this reader infers that the answer means money to him. So we are led to believe that this particular article will be of value to him, as we are frequently informed that MOTOR AGE is of real financial advantage to many dealers.

We hope that this is correct and that our correspondent got all of the financial advantage from this article that he expected.

The point that we wish to emphasize here is that there is always more than one article in MOTOR AGE and that a full reading of the magazine is worth while to those concerned in automotive merchandising. Most of the ques-

tions that come to us have been answered in the magazine and have been overlooked by busy men.



Maintenance will be the dominant factor in the future of the automotive industry.



Associations

IN one middle west city there will be two prominent lines of cars that will not be exhibited at the annual show held in that city unless at least two dealers in that city make it perfectly plain within the next few weeks that they intend to sell cars according to lines that are considered ethical by the large majority of dealers in that community.

In other words, two dealers have been expelled from this association because of flagrant violations of business ethics. Any one who reads the charges and the defense in the two cases cannot help but agree that these men cannot be regarded as fair competitors by other business men.

And still another line is likely not to be shown in this show because a factory recently engaged as the dealer in that community a man who had previously been dropped from the dealers' association and who later failed in business and, according to reports, narrowly escaped criminal prosecution. Business men in this community give this man six months until he again fails and they venture the prediction that he will "get" the factory for some money.

In these three cases the factory knows the situation and is apparently indifferent to it. Apparently the factory attitude is that the opinion of the other dealers of that community does not mean anything to them, and in one case that the man's business record is a matter of little import.

These dealers may or may not succeed in spite of the attitude of the majority of the dealers but it seems rather surprising that such important factors should not be considered. Trade reputation should be worth while in any community and very often business men judge a car by its local representation.

Also it is interesting that even in the local associations, membership is becoming selective. When automotive dealers become jealous of the company that they keep, then the dealer morale will go onto a higher plane. We believe that it is a province of a business organization to designate who are ethical merchants. Some day, automotive dealer association signs will begin to carry a worth while significance.



The dealer should be a leading business man in his community.



Seeing the Lesson

IT is rather a smart man who can always get the right lesson out of an experience. Recently the manager of the Chicago office of a New York company sent his stockkeeper to the eastern city to look over the place and see what he could learn there. The man profited somewhat by his observations as to stock keeping and the trip was probably worth the cost without any additional results, but there were added results.

This man also happens to be in charge of the janitor service and in telling of his experience in the east, he said: "The uncleanness of the New York office impressed me greatly. Also the apparent confusion in routine things.

So when I got back home, I went over to our janitor's home and told him what I had seen; how badly the home office compared with ours.

"Then I told him that it was up to us to keep our office even cleaner than before, that we could profit only by a decided contrast and that as we had such an excellent start, we should go full length."

And this man has been driving ever since for a cleaner and more orderly office. Instead of taking any particular self satisfaction out of a job well done, this contrast has merely served to stir him to better things.

A novel result, perhaps, but a most happy one.



Tell the truth even though you miss a sale. Exaggeration doesn't pay.



The Transportation Store

A READER of MOTOR AGE recently was rather critical of the Transportation Store editorials because he thought that in these editorials we were advocating that every automotive dealer should sell a complete line of cars. We pleaded not guilty and further conversation sufficed to convince this man of the program we were advancing.

So that there will be no mistake in our position on this matter we will explain, exactly, our attitude toward a single or multiple line of cars for sale in a single establishment.

We believe that where a dealer has the outlet for a sufficient number of cars from a single factory to insure him a profitable business, that he is fortunate and that he should stick to this line as long as the factory can supply his need for cars in quantity to enable him to carry his overhead and make a reasonable profit. Of course he must have volume to do that, the volume varying with his property investment.

In many cases the outlet for the product of a single factory is not sufficient in the community to carry the expense of a proper establishment and in other cases the factory cannot supply this dealer with as many cars as he can sell and as he has prepared to sell. In either of these cases we believe that the dealer should add a line that does not conflict in price with the one that he is already selling and we believe that this price distinction should be a clear cut one, not just a few dollars.

In the case of the exclusive dealer, we mean by a transportation store that he should sell maintenance, tires, oil and gas, accessories that look well and perform well on his car. In fact his store should be the only one in the mind of one of his owners for anything automotive. We believe that such a dealer should put into his cash register 95 per cent of the money that his car owners spend for automotive wants.



You must have profit on every department. Breaking even means standing still or going backward.



Blazing a Path

RECENTLY we heard a very keen salesman talk to a party of automobile dealers and he gave them some excellent advice. But he rather weakened his case with several of them by saying that "in no other line of merchandise did a merchant ever take back his old goods in exchange for new."

It so happens that one of the automobile dealers in the audience was formerly in the piano business, and another

had sold sewing machines. Still another was once a typewriter and later a cash register salesman. These three men knew that this statement was wrong, for all of them had in their previous experiences taken old goods for new.

There are so many points on which the automotive dealer is blazing a new path in the mercantile business that he is much too apt to think that he is entirely different from any other merchant who ever existed or who will ever go into business. That is not true and the merchant gains nothing by getting himself in that frame of mind.

Automotive vehicle merchandising is subject to all of the fundamentals that merchandising has been subject to for generations. Merely because the sales ticket is written for larger sums than is done in other stores, does not change these fundamentals. Primarily an automotive merchant must buy his goods at a lower price than he is going to sell them for; he must keep his expenses below the margin between cost and sales price; he must keep an accurate record of his transactions, and he must show some ingenuity in gaining and holding customers.

The merchant who is doing these things need not worry much because automotive merchandising is comparatively a new venture. But if this automotive merchant requires precedent to show him how to act, he can find precedent on all of his problems in merchandising history.



Sell an overhauling job for a Christmas present.



Neglected Opportunities

DID you ever count the cars with and without bumpers in any line of parked vehicles? Did you ever note the difference as to the number with bumpers in the large centers of population and the less thickly settled neighborhoods? Did you ever note that in some communities bumpers are much more numerous on cars than in others?

This bumper investigation is one of the easiest to make and it nearly always gives an indication of the merchandising effort on the part of the motor car dealers or the accessory merchants. In some communities you will find the number of bumpers in proportion to cars much higher than in others and then you can always trace this to the efforts of one or more merchants.

The writer happens to know a very prosperous automotive dealer who has sold several hundred cars this year and TWO BUMPERS WITH EACH CAR. This man takes the position that his cars are too handsome, too valuable in every way, to be taken out and marred by careless drivers of other cars. He does not sell bumpers to the car owner as a guard against his own carelessness or faults, so much as he does for protection from the other fellow. Other dealers in that community have taken the suggestion from this man and this community ranks very high in bumpers.

The same is true in many smaller communities. One good merchant leads others and the cars of that community are better for this leadership. There is no one thing that makes the cars of a community show as badly as a lot of crushed fenders.

Too many merchants are neglecting the opportunity in selling bumpers, in the face of the mute evidence on the streets every day of the value of bumpers. Pride of ownership of a well preserved car is the strongest sales point for a bumper. Pictures of crashes have been tried and found wanting. They not only do not promote bumper sales, but they keep people from buying cars and if they do not have a car, the chance of selling a pair of bumpers is extremely slight.

Enclosed Car Output Increases

Production Planned on Scale to Fulfill Winter Demand

Many Factories Operating at Capacity and Others Are Stepping Up Schedules

NEW YORK, Sept. 17—Fewer working days in September will result in bringing down the total output of automobile producing plants for the month. In September of last year production of passenger cars and motor trucks was 206,849, of which 187,661 were cars and 19,186 trucks. This was a decline of 70,000 from the total of the preceding month. There will be no such decline, however, this year and production for the month will be considerably more than a year ago.

The industry is fast on its way toward rounding out a production year close to 4,000,000 as against 2,659,064 in 1922, inclusive of both cars and trucks. It is possible that of the total, 3,600,000 will be automobiles as against 2,406,396 in the preceding year. The quarter that ends with this month will bring a total output less than the second quarter but probably greater than the last three months of the year.

Reports from major car producers show capacity operations in some cases, with a gradual stepping up in others. Plant facilities have been rearranged to take care of new models, upon which deliveries are being made. It is indicated that there is a strong demand for such models, warranting top speed operations in the factories producing them. Innovations in design and equipment have been made which, in addition to the fact that the cars are of a new type, are acting as a stimulus to purchasing.

A large percentage of the output this month and for the balance of the year will be of closed cars, although a sufficient portion will be of open models to take care of the demand in sections of the country where local conditions make them more popular. Profiting by past experience, it is not expected that deliveries of closed cars will be held back because of a body shortage. Body making plants are better equipped to meet the anticipated demand.

While new car sales are reported good, the used car movement is somewhat backward, a condition to be expected during the new model season. Various expedients are being adopted to enable these cars to be absorbed, thus doing away with an unhealthy accumulation in dealers' hands.

There has been some improvement in truck output and sales, this branch of the industry picking up from the falling off noted the latter part of summer. The betterment, naturally, is a slow process and manufacturers are proceeding cautiously with production programs. Un-

settled farm conditions have retarded the development expected earlier in the year and much of the future program will depend upon a more wholesome tone given to the farmer's purchasing disposition.

Of late, a more encouraging outlook has been apparent in agricultural areas, with somewhat of a quickening of interest. The southeast reports improvement and sections of the middle west hold out prospects for increased sales of automotive products.

The news of the automotive industry for the last few weeks has been replete with information of vital importance to every automotive merchant. Rather unexpectedly some of the large manufacturers of automobiles have reduced prices, and full details of these reductions have been printed in the MOTOR AGE news department. Some producers have passed into the hands of receivers and others have announced important expansion and development plans. Dealers throughout the country have shown extraordinary activity. The industry is apparently in a more progressive state than for many years and important developments are to be looked for.

Cadillac Dealers Begin Showing New V-63 Model

DETROIT, Sept. 15—Dealers throughout the country this week began showing the new Cadillac model V-63. The showing was simultaneous in all large cities, the new cars having been in shipment to dealers since the middle of August.

The prices are slightly higher than on the corresponding models of the old line. The new list follows:

Touring car	\$2985
Phaeton	2985
Roadster	2985
2-Pass. Coupe	3875
5-Pass. Coupe	3950
Sedan	4150
Suburban	4250
Imperial Sedan	4400
Imperial Suburban	4500
Limousine	4600
Town Brougham	4600

In the former line the three open models were priced at \$2885, the sedan at \$3950 and the limousine at \$4300.

16,000 BUICKS IN AUGUST

DETROIT, Sept. 15—Buick Motor Co. production in August approximated 16,000, a gain of 4,500 over production of August last year. A new daily record for shipments was set on Aug. 31 with 972. Sales of the new models are reported by E. T. Strong sales manager, to be coming through in large volume. September production will be increased. Many departments of the factory are working extra shifts and extra hours.

Oldsmobile and Oakland Complete Factory Renovation

Plants of General Motors Units Put in Shape for Larger Production of New Models

DETROIT, Sept. 15—Two of the General Motors units, Oldsmobile and Oakland, have just completed factory expansions in preparation for new models which have been made without disturbing production operations.

At Lansing the Olds Motor Works moved its engine plant a distance of several hundred yards, changed the axle plant and moved other departments to make room for new enameling ovens and a progressive chain assembly system for the making of engines. In connection with this expansion movement, the company also added 500 new machines to the engine plant alone and 250 more to the axle plant. Other sections of the factory also were changed that better paint shop facilities and body making department are available. This expansion means the adding of more than 1000 employees to the payroll.

Factory alterations at Pontiac have resulted in practically rebuilding the entire interior of the Oakland plant. Installations of new systems and new machinery have been made which have involved the outlay of approximately \$2,000,000. When finished the plant will have a capacity of 500 cars daily, more than twice its present capacity.

MOON USES BALLOON TIRES

ST. LOUIS, Sept. 15—Moon Motor Car Co. announced this week that hereafter all models of Moon cars may be had with balloon tires as optional equipment. The 6-40 and 6-50 models take 30x5 in. balloon tires and the 6-58 models take 32x6 in. tires. Smaller wheels than the standard are provided when balloon tires are used. The company states that 20 to 35 pounds of air pressure is sufficient for these tires.

FOUR APPERSONS REDUCED

KOKOMO, Ind., Sept. 17—Price reductions ranging from \$215 to \$465 on four of the Apperson 8-cylinder models were announced today by the Apperson Bros. Automobile Co. The models affected and the new and old prices are:

	Old Price	New Price
5-pass. phaeton.....	\$2700	\$2485
7-pass. phaeton.....	2900	2485
5-pass. sedan.....	3750	3385
7-pass. sedan.....	3850	3385

RUBBER COMPANIES NOT TO MERGE

AKRON, O., Sept. 15—The proposal to merge the Star Rubber Co. and the Mohawk Rubber Co. has been abandoned, according to L. H. Firey, president of the Star company.

Chevrolet Opens Assembly Plant Built in Buffalo

New Factory Designed to Supply Cars for New York, Maryland, Pennsylvania and Virginias

BUFFALO, N. Y., Sept. 17—Chevrolet Motor Co.'s new assembling plant on East Delavan avenue, Buffalo, is practically completed and operations have already begun there. One wing of the establishment is a unit of the Fisher bodies for the Chevrolet cars assembled here. About 450 operatives are now at work in the new plant, and by Nov. 1, it is expected some 2500 men and women will be at work.

The Buffalo plant is designed to assemble all the cars required to fill the wants of Western New York, all of Pennsylvania, Maryland, a portion of Virginia and West Virginia and the northeastern part of Ohio.

With plenty of land owned around the large new structures, the plant is prepared for expansions and extensions as fast as they may be required by its business.

Division Sales Manager G. W. Semmons will have his headquarters for the district at the Buffalo plant. W. H. McLean will have charge of the establishment's business and accounting end. The actual assembling work and the general operation of the concern will be in charge of Plant Manager G. J. Dorschell.

HOLYOKE DOES NOT STOP

HOLYOKE, Mass., Sept. 15—The Holyoke Automobile Dealers' Association is one of the few dealer organizations in this section that does not halt its functions during the summer period, but holds regular meetings throughout the

season. Officers of the association say there are always plenty of fruitful themes for discussion and it is felt that interest is better sustained throughout the year by this policy.

The association demonstrated its "live wire" characteristics by boosting the city's jubilee celebration, going in strong in the civic parade and giving free automobile service to bring G. A. R. members, Voters of 1873, and other aged persons into the parade and to the pageant which was a salient feature. The dealers will conduct a closed car show at some date in October yet to be fixed.

600 OLD TIMERS IN CLUB

CHICAGO, Sept. 17—Enrollment of about 600 members for 1923 in the Old Timers' Club is reported by Harry P. Branstetter, president. The club's officers are conducting an active campaign to enroll as many as possible of the men who have been connected with the automotive industry for five years or longer.

The club has been made a social organization with membership dues of \$5 a year, with plans for meetings at the New York and Chicago national automobile shows. Branstetter declares the club should have 10,000 members within a few years. Branstetter's office is at 2556 South Wabash avenue, Chicago, where for years he has sold Kissel cars.

READY FOR M. A. M. A. MEETING

NEW YORK, Sept. 15—Plans have been fully completed for the annual fall convention of the Motor and Accessory Manufacturers' Association, which will be held at the Copley-Plaza Hotel, Boston, from Wednesday to Saturday of next week. Acceptances have been received from more than 200 representatives of companies holding membership in the national organization, while many others identified with the industry will be among those present.

250,000 Persons Saw Fiats Win European Grand Prix

Further Details of Monza Race in Which Jimmy Murphy in Hiller Special Met His Masters

ROME, Sept. 9—(By cable—delayed)—Denied victory in the French Grand Prix when its chances seemed best of the brilliant field in that great classic, Fiat today more than evened the score by running one, two in the European Grand Prix over the Monza speedway at Milan. Jimmy Murphy, American champion, in a Miller Special, was third.

The winning Fiat was driven by Salamano, who led the French Grand Prix most of the way, being forced out by the exhaustion of his gasoline supply. In today's race Salamano covered the 497 miles in 5 hours 27 minutes 38 seconds, an average of 91 m.p.h. The Monza race was for cars of 122 cubic inch piston displacement. Salamano's fastest lap today was 99 m.p.h.

Second to Salamano was his team mate, Nazzaro, long one of Europe's greatest drivers and who has competed in several American road races, who covered the distance in 5 hours 26 minutes 2 seconds. Murphy's time was 5 hours 32 minutes 51 seconds and he was two laps behind the winner, a distance of about 12 miles.

None other than Premier Mussolini officiated as starter today, sending away a field of 14 cars, with 250,000 people watching the battle of the speed merchants. Bordino, the third Fiat pilot, led the way for 48 laps and apparently had the speed of the party. Unfortunately for him, though, the severe accident which he suffered 10 days ago in training was reflected in his physical condition and he was forced to quit the race while still leading.

This left the battle to Salamano, Nazzaro and Murphy, the two Italians apparently holding Murphy safe in the matter of speed. Their Fiats were faster than the Miller, Murphy being handicapped by an unsuitable gear ratio. With Bordino out, Nazzaro assumed the aggressive and with ten laps to go he secured a lead on Salamano, when the latter went to the pits for a tire change. Beginning the last lap, there was only four seconds between the pair but Nazzaro slowed and his team mate gathered in the honors.

Of the remaining cars in the race, Minola in a Benz covered 76 out of the 80 laps; Horner, Benz, 71, and Alzaga in an American Miller, 70. Then the crowd invaded the track, stopping the race.

Murphy made only one stop and that to change a tire. The entire Voison team went out because of mechanical troubles. De la Landre, in a Rolland-Pilain, broke a roller bearing in his engine. Guyot, also Rolland-Pilain, burned a leg, while Count Zbrowski had engine trouble. Walb in a Rumber Benz had engine trouble.

Men Who Make and Sell Cadillacs



This group of Cadillac distributors, factory officials and district managers met recently in annual convention at the Cadillac factory to learn all about the new V-63 models that are now on the market. An interesting address on engineering developments in the automotive industry was delivered by Charles F. Kettering, president of the General Motors Research Corp.

Canadian Industry Shows Progress

Automotive Manufacturers of Dominion Elect Officers

W. T. Sampson Again Heads Organization at Annual Meeting at National Show in Toronto

TORONTO, Sept. 15—The election of officers at the annual meeting of the Automotive Industries of Canada held in Toronto a few days ago resulted in the return of W. T. Sampson of the Ontario Steel Products Co., Limited, of Gananoque, as president; T. A. Russell, president of Willys-Overland, Limited, as vice-president, and W. G. Robertson as secretary-treasurer.

The following were elected members of the board of directors: W. R. Campbell, Ford Motor Co. of Canada, Ltd., Ford, Ontario; C. H. Carlisle, Goodyear Tire & Rubber Co. of Canada, Ltd., Toronto; W. A. Eden, Dominion Rubber System, Limited, Montreal; Robert Gray, Gray-Dort Motors, Ltd., Chatham; R. S. McLaughlin, General Motors of Canada, Ltd., Oshawa; W. A. Rowland, Steel Company of Canada, Ltd., Toronto; J. A. Taylor, Taylor-Forbes Co., Ltd., Guelph, and the officers.

The Automotive Industries of Canada is an association made up of the car, tire, truck, equipment and parts makers of the Dominion and is analogous to the National Automobile Chamber of Commerce in the United States. The annual meeting was well attended. A salient feature of general interest is that members desire that the construction of the Automotive Palace at the Canadian National Exhibition be started and executed as expeditiously as possible. It is to be hoped that by the time another year rolls by the Automotive Palace will provide accommodation for automotive exhibits that in finish and extent will be commensurate with the quality and importance of the products of the industry exhibited and the public's interest in them.

To Resume Negotiations

The Automotive Industries of Canada will resume negotiations with the Exhibition authorities in the very near future with the hope that work will be started on the Automotive Palace as soon as possible.

A brief description of the Palace will be of interest. The architects' plans have been approved. It will stand on the lake side of the imposing new main entrance, the most palatial and beautiful, though not the largest building of the many that make up the annual world's fair. It will be 475 by 386 ft., two stories with 51,584 sq. ft. of exhibition space for cars, 30,024 sq. ft. for trucks and 18,110 for equipment exclusive of rest alcoves, fountain spaces, aisles, etc. Magnificent stairways will connect the two floors, the lower of

which will have its main entrance on the Lake Front Boulevard and the upper on the Grand Boulevard. No ramps or elevators are needed, because of the slope of the site selected.

In the course of the A. I. C. president's report he declared:

"Automotive production in the year 1922 was greater than in any preceding year, a total of 98,000 motor vehicles being produced by Members of the Automotive Industries of Canada, this output having a wholesale value of \$73,310,472 as compared with a total production of 65,355 motor vehicles of a wholesale value of \$61,667,535 in the year 1921. The growth of export trade to 40,000 vehicles largely accounts for the increased production. Automobiles made in Canada are being shipped to all parts of the world. This development of the world market in open competition means big business for the future of the Canadian automotive industry, and is a source of justifiable pride to the Canadian people.

"The amount of capital invested in the automotive industry by members of the association at the beginning of the present year, was \$82,345,766; the total value of production in 1922 was \$101,997,867. A total of 14,354 people were employed, and \$20,933,509 was paid in wages and salaries last year.

Change in Sales Tax Only Important Legislation

"Excepting the change in the sales tax, no important fiscal legislation affecting the industry was passed at the last session of Parliament. The new sales tax of 6 per cent on the sale price of all goods produced or manufactured in Canada, and 6 per cent on the duty paid value of imported goods, with certain exceptions, becomes operative on Jan. 1, 1924. The fundamental idea upon which the new tax is based is that the tax shall be payable once only, and that it shall apply to goods in the final stage of manufacture or production and which are not to be used in, wrought into, or attached to other manufactured articles.

"The manufacturer of tires, for instance, does not pay the tax on the sale thereof to the automobile manufacturer, but the latter pays the tax on the sale of the completed motor vehicle. The Department of Customs and Excise is now engaged in the preparation of regulations covering the various phases of the new Legislation and it is expected that they will shortly be promulgated. In the event of any of the regulations being difficult or impossible to comply with, there will be ample time before commencement of the operation of the act within which to make representations to the department."

Most leading manufacturers and dealers report more sales made during the National Motor Show than at any of its annual predecessors. The general feeling is that business will be better—and

automotive business in Canada with the exception of few makes and some districts has been good. Many members of the trade report their biggest year. The attendance of approximately a million and a half (1,493,000 to be exact) at the exhibition eclipsed all records and exhibitors declare that general as well as the buying interest was without precedent, doubtless due to the fact that the 1924 models shown in several instances revealed more radical revisions than have been seen in a national show on this side of the Atlantic since the inception of the V type multi-cylinder engines and electric starting and lighting systems. It is not with unmixed feelings of joy that the trade generally concedes that the National Show, in a sense was the valedictory of the era of straight production and the genesis of an era of transition in design—or rather the renaissance of it after a moratorium of nearly a decade.

Record Crops Grown

Canada is garnering record crops. Unprejudiced reports indicate that the wheat crop will eclipse the bumper yield of last year by 50,000,000 bushels roughly and will be but 50,000,000 short of half a billion bushels. By and large the prospects in the various sections of the Dominion are fair to excellent and are generally good.

Ontario continues to buy approximately half the motor vehicles in the Dominion and is spending more money now on highway improvement than ever before. During the past decade this province has spent, all told, approximately \$80,000,000 on roads. Aside from domestic advantages the revenue derived from tourist traffic is enormous. Last year five-sixths of the 800,000 U. S. motor cars that entered the Dominion came into Ontario. On a recent Saturday a check at Oakville on the Toronto-Hamilton highway revealed that an average of one U. S. car a minute passed. The cars bore licenses of most the States in the union, including Florida, California and Washington, though, of course, the majority were of New York State, Michigan, Ohio and Pennsylvania.

The fact that General Motors of Canada, Limited, is building three new plants at Oshawa and that the Canadian Ford Company is constructing a \$10,000,000 addition at Ford, Ontario, to say nothing of the new Toronto Ford and Durant plants, is more convincingly indicative of "the prospects" in Canada than any interviews could be.

NEW WILLYS-KNIGHT SEDAN

TOLEDO, Sept. 15—A five-passenger sedan has been added to the Willys-Knight line. It will be offered in two types, one known as the standard, listing at \$1,795, while a de luxe model will sell for \$1,895. No chassis changes have been made.

Detroit Dealers Have New Spacious Hall for Fall Show

Enclosed Car Exhibition Will Be Held Oct. 6 to 13 in Convention Hall Building

DETROIT, Sept. 15—The annual closed car show of the Detroit Auto Dealers' Association will be held Oct. 6 to 13 in the new Convention Hall Building erected by John H. Thompson. For the first time in many Detroit shows, exhibitors will have practically unlimited space for the showing of their cars, as the new building contains one of the largest exhibition halls in the country, all on one floor level.

Deviating from the policy of former closed car shows held by the association, in which only regulation closed cars were exhibited, this year the show will be open to convertible body cars, California tops, etc., but no isinglass will be shown. In addition to the showing of cars, however, the management plans to admit special exhibits of bodies and equipment in keeping with the nature of the show. This includes the showing of motoring apparel, robes and appurtenances.

The building is located within the two mile circle, and runs from Woodward to Cass avenues, with entrances on both sides. Trolley and bus lines pass the door. It is declared ideal for show purposes, permitting of wide aisles so that the largest crowds may be accommodated without congestion. The show will run a full week instead of four days as formerly, and admissions will be 50 cents. Customary arrangements as regards exhibitor passes will be made.

With the advantage of large space, the show will be thrown open to all dealers of the city. Formerly the lack of space compelled limitation reservation to members of the association. General public interest in the many new models of recent appearance is expected to insure large attendance and dealers express confidence of a large amount of buying resulting.

Auburn Putting Out Seven Body Types on 1924 Chassis

AUBURN, Ind., Sept. 18—The 1924 Auburn cars, which were announced a few weeks ago at prices considerably under the 1923 level, are being put out in seven body types. The big six-63 is being made in phaeton, sport, touring coupe and sedan. The mechanical changes are of a minor nature and the comforts of driver and passengers account for a good many refinements in the bodies. The wheelbase of the six-63 is 2 in. longer, bringing it to 124 in. The body is by McFarlan and aluminum panels have been used to reduce the weight and improve the finish. Windows are wider and the doors have been fitted with a chain action check which fits into the body when the door is closed. The six-43 model has an added feature in

the operation of the windshield wing. When folded back this wing fits flush with the windshield and door and swings with the door. The curtains are carried to the wing and fastened to it. This gives a greater range of vision when the curtains are in place.

A new sedan is to be put out on the six-43 chassis. It carries five passengers and is fitted with Clement window lifters. The top is of the soft roof type.

First Showing of A. E. A.'s Automotive Christmas Film

CHICAGO, Sept. 15—The first public showing of the Automotive Equipment Association's Christmas merchandising film, entitled "An Automotive Christmas," was at Fort Wayne, Ind., last night under the auspices of a Fort Wayne jobber. The film was finally completed only this week when approved by Arthur R. Mogge, director of merchandising.

A meeting of jobbers and their salesmen in the eastern territory is to be held at Philadelphia Sept. 21 at which the film will be shown and an address will be made by Mogge. Following this meeting, which will be at 6:30 p. m., there will be a meeting of all dealers in Philadelphia to view the Christmas film.

Christmas advertising literature prepared for members of the A. E. A. to distribute to their dealer customers is now ready, Mogge said, and will be supplied to all members in desired quantities. This printed matter includes window cards and streamers in colors.

SHOW SPACE AUCTIONED

NEW YORK, Sept. 15—Lively bidding marked the auctioning of space for the closed car show which will be held in the Grand Central Palace, Sept. 29-Oct. 6, under the auspices Automobile Merchants' Association of New York. Twenty-three ground floor spaces sold for a premium of \$27,595 over the regular space charges. Packard paid \$1600 for first choice, Cadillac \$1750 for second and Marmon \$1800, the highest price, for third. In all there will be thirty-eight exhibitors in the show, including Hudson, Nash, Maxwell and Chalmers, Jordan, Cole, Oldsmobile, Locomobile, Rolls-Royce, Reo, Pierce-Arrow, Haynes, Aperson, King and Dort.

MORE 4-WHEEL BRAKES COMING

DETROIT, Sept. 15—Lockheed hydraulic four-wheel brakes will be announced as standard equipment on two leading cars within the next several weeks, it is learned from D. O. Scott, general manager of the Hydraulic Brake Co. These cars are in distinctly different price classes. It is also learned that 18 different manufacturers, making cars in all classes, have the hydraulic brakes under test on experimental cars.

The performance of these brakes over a three-year period on cars which have been equipped by distributors is exerting a powerful influence in their favor upon manufacturers, Scott said.

Highway Board Announces Third Safety Essay Contest

\$6,500 in Prizes to Be Awarded Children and Teachers in Grade Schools

WASHINGTON, Sept. 15—A substantial part of the \$12,000 contributed by the National Automobile Chamber of Commerce to the Highway Education Board will be given away in prizes for the third annual safety campaign promoted by the latter organization, in which the automobile manufacturers always have shown keen interest.

Sixty-five hundred dollars will be devoted to prizes in this campaign, which is intended to train children in the habits of highway safety. Through the children it is hoped that the principles of traffic regulation and safety education will be impressed upon adults, both pedestrians and drivers alike.

The campaign will take the form of two contests, one among elementary school pupils, and another among elementary school teachers. There will be approximately 500 state and national prizes given for the best essays and lessons written. The subject of the essays which children are invited to write is "Highway Safety Habits I Should Learn." Essays, as last year, are not to exceed 500 words in length and those eligible are pupils of the fifth, sixth, seventh and eighth grades who are not more than 14 years of age. The contest opens with the beginning of school and closes Dec. 4, 1923.

Teachers are requested to submit safety essays on the subject "Training Children in Habits of Safety on the Highways," confining them to from 1,000 to 3,000 words. All elementary school teachers in the eighth and lower grades are eligible.

Complete details of the contest will be furnished to those interested by the Highway Education Board, Willard Building, Washington, D. C.

Discuss Policy and Selling at Fall Meeting in East

SPRINGFIELD, Mass., Sept. 15—At the opening meeting of the fall season, the Springfield Automotive Dealers' Association discussed various questions of dealer policy and car merchandising. The used car situation was reported as more satisfactory than it was early in the year. There was a discussion of ways and means of remedying the shortage of salesmen, which is one of the most troublesome problems that now confront the dealers here. The general outlook for sales this fall was reported as encouraging.

PACKARD SUES FOR TAXES

DETROIT, Sept. 15.—Packard Motor Car Co. has filed suit in the county court here against the city of Detroit for \$73,552.80, alleging this amount was collected in excess taxation.

N. A. D. A.'s Accounting System For Dealers Ready For Press

Volume Providing Complete Business Plan Compiled at Cost of More Than \$5000

ST. LOUIS, Sept. 18—C. A. Vane, general manager of the National Automobile Dealers' Association, in a letter to the members, announces that the plan of N. A. D. A. to draft an accounting system into one book for automobile dealers has been completed.

The original announcement that such a plan was under way was made eight months ago and since that time publishers all over the country have been consulted with a view to producing the book at the lowest possible cost. Approximately 900 dealers declared that they were interested in such a proposition and it is to them that Vane's letter is addressed.

Up to the present time the Association has spent nearly \$5,000 in this work. To complete the job will require about \$25,000 all told, but it will not be carried further unless there is a demand for it.

Vane's letter requests the recipient to send a check for \$20 if he wants to receive the book. When 500 such checks have been received the work will go forward. Should the response be not up to the 500 mark those who send in checks at once will have them returned by October 15. The \$20 is the exact cost of manufacturing the book.

Contained in the book is every item which will come up in the course of a dealer's business with a book of instructions. It will be bound in very serviceable material and it is said that the system is so simple that a school boy could care for the accounts.

Atlanta Dealers Hold First Fall Meeting; Plan Outline

ATLANTA, Ga., Sept. 17—The first fall meeting of the Atlanta Automobile Association was held the early part of this month after a summer of inactivity, and plans outlined for the work of the association during the coming year.

In the future the association will give considerably more attention to departmental meetings, as the association now includes every branch of the industry, with the recent affiliation of the Atlanta Battery Dealers' Association. Each department will meet at least every month, with the primary work devoted to the discussion and outlining of merchandising problems and of sales promotion matters.

COATES CREDITORS TO MEET

COLUMBUS, O., Sept. 15—John G. Price, receiver for the Coates Steam Car Co., of Columbus, announces that a meeting of the creditors of the company is scheduled for Columbus, Sept. 20, when a number of legal matters will be threshed out. An inventory of the prop-

erty of the bankrupt concern shows real estate of \$278,000, which is fully covered by mortgage, and chattel property of about \$20,000. This consists of materials and machinery. No disposition has been made of \$9,000 which was advanced by agents and which is held by a Columbus bank, awaiting court decision as to its disposition. So far, no offer has been received to take over the plant for manufacturing purposes.

More Cars Than 'Phones

DALLAS, Tex., Sept. 15—There are more automobiles in Texas than telephones if state registration of motor vehicles and statistics of the telephone companies are correct.

According to the registration figures of the highway department of the state, there are more than 600,000 licenses issued for motor vehicles in Texas this year.

The statistics compiled by the telephone companies of the state show there are a few more than 525,000 telephones in use in Texas.

WINTER SHOW IN BALTIMORE

BALTIMORE, Md., Sept. 15—First steps have been taken by the Automobile Trade Association, Inc., of this city for the big winter automobile show which will be held at the Fifth Regiment Armory. It probably will be held in January. A. H. Bishop, president of the association, has appointed a show committee. It consists of E. R. Myers, T. W. Wilson, Jr., W. F. Kneip, A. S. Zell, Joseph R. Manuel, Thomas G. Young and Louis Fox.

ST. LOUIS COMPANY SUED

ST. LOUIS, Sept. 14.—Depositions taken in the suit against the St. Louis Automotive Corporation by Mrs. Kathryn Gerdes disclosed that the company had \$2.85 in the bank and debts of several thousand dollars. John Neskov, president of the company, said the assets of the firm had gone in salaries and the building of five automobiles which are in storage, against which there are mortgages.

OLDS ADDS 1,000

LANSING, Mich., Sept. 15.—More than 1,000 employees will be added to the payroll of the Olds Motor Works, when present factory alterations are completed, according to John Scott, factory manager, who asserts that one of the most complete shifts ever made at any automobile factory has now been nearly completed, without in the least disturbing the present high production.

MOTORIZE FIRE EQUIPMENT

WASHINGTON, Sept. 17.—Recommendations that all horse drawn fire-fighting apparatus be abandoned in favor of motorized equipment has been made by the District of Columbia Fire Chief George S. Watson, after a survey, made at the instance of the Federal government.

Improvement in Tire Trade Noted by Midwest Makers

Association Votes to Continue Organization and Maintain Chicago Headquarters

CHICAGO, Sept. 15—The Midwest Rubber Manufacturers' Association at a meeting here this week took a new lease on life. A resolution was adopted to table all suggestions for the consolidation of the association with any similar organization and it was decided by the board of directors that aggressive steps will be taken to expand the membership. It was also decided to retain the headquarters at Chicago.

Manufacturing members viewed the tire situation as slightly more favorable than it has been for several months. From the Mississippi Valley territory came reports that the low price of gasoline now in effect in this section has resulted in a vastly increased use of automobiles with consequent need of more tires.

A reaction of tire buyers from the extremely low priced and admittedly inferior casings also was reported. Manufacturers in the Midwest group who have standardized on a quality product at a fair price declared they have no trouble in disposing of their goods. At least two of these manufacturers asserted that all their sales are now being made for cash with order or C. O. D. and that they are cooperating with jobbers and dealers in the merchandising of the goods. It was indicated that the association is considering taking a strong stand officially in the near future against practice of long dating of invoices in the tire trade.

J. I. Case Co. Awards Prizes For Best Dealer Advertisers

RACINE, Wis., Sept. 15—At the conclusion of an advertising contest among the company's dealers the J. I. Case Threshing Machine Co., manufacturer of the Case automobile, has awarded cash prizes to the winners. First prize, \$75, was awarded to Hoggatt Auto Sales Co., Marshalltown, Ia.; second prize, \$50, to Vehrs Sales Co., Nekoosa, Wis., and third prize, \$25, to J. E. Hyde, Clark, S. D.

Others receiving special mention were L. S. Davis, Lewiston, Mont.; E. T. Ter-net, Payne, O.; Teamer Machine Shop, Elk City, Okla.; Linares & Cantera en Cta., Tres Arroyos, Argentina; Walter R. Johnston, Coldwater, Kan.; Harland Lund, Pratt, Kan.; James dt St. Remy, Dinsmore, Saskatchewan; Charles J. Schwartz, Knoxville, Ind.; B. C. Shonoyo, Bushton, Kan.; S. E. Scheer, Stryker, O.

Advertisements submitted in the contest were judged for the elements of attracting attention, arousing interest, creating desire and getting action. Importance was attached to their adaptability to local conditions.

Studebaker Building More Service Stations in Detroit

Increased Demand for Cars in That City Prompts Move of Indiana Manufacturers

DETROIT, Sept. 15—Studebaker Corp. of America is establishing several new service stations in Detroit, as branches of the present factory service station, to meet the demand for service arising from the increasing number of Studebaker owners in the city. The new stations are being added after a survey of service conditions in the city by H. B. Harper, general sales manager of the Studebaker Corp.

Under the Studebaker service system in this city, the sales branch and the group of resident dealers are relieved of all service obligations, this being all under factory supervision and administration. The company's service policy as to charges is to assess these on a basis that will make the service branches and sales branch self-sustaining, thus keeping the expense to the owner at minimum.

This policy on service, it is understood, will be carried out in all large cities in which the company has a sales branch and group of resident dealers. By consolidating the service under factory supervision, the sales branch and dealers are in position to devote exclusive attention to sales. It has the additional advantage of bringing all service work to one point where facilities and equipment may be maintained, making for greatest economy and facility in handling the work.

Slight Falling Off in Sales Is Felt in Ohio Districts

COLUMBUS, Sept. 14.—A slight falling off in the demand for passenger cars is reported by dealers and distributors of automobiles in Columbus and central Ohio. This is due partly to the season and also to the fact that business generally has declined to a certain extent. But dealers are encouraged over the outlook for the fall months and have made preparations accordingly. Farmers are coming into the market better, as they have harvested good crops at fair prices and are thus willing to discuss the purchase of new cars.

Closed models are still in the lead as many dealers say the demand is about 65 per cent for closed to 35 per cent open cars. Others do not give as wide a variance and it is safe to say that the demand is 60 per cent for closed to 40 per cent for open models.

\$150,000 FEES IN WILLYS FEES

TOLEDO, Sept. 15—Fees amounting to about \$150,000 to receivers and attorneys interested in the Willys Corp. receivership were allowed by Judge Killits in the federal court here.

Tracy, Chapman & Welles, solicitors

for plaintiff, Ohio Savings Bank & Trust Co., and for the receivers, were granted \$53,243.96, of which \$50,000 was fee and the remainder expenses, and may be granted additional fee for their work in connection with sale of the big block of Overland stock.

Rathbun Fuller, solicitor for receivers; E. J. Marshall, solicitor for receivers and counsel for bank creditors committee, and Frank P. Kennison, receiver, were each granted \$25,000.

Francis G. Caffey, receiver, was given \$12,000; Curtis T. Johnson, special master, \$5,000; and Forrest Jeffries, solicitor for defendant, was allowed \$2,500. This was the second distribution of fees.

Farley Elected President of Auburn Automobile Co.

AUBURN, Ind., Sept. 15—The board of directors of the Auburn Automobile Co., at a meeting here, elected J. I. Farley as president of the company to succeed A. P. Kemp whose resignation was accepted at the same meeting.

Farley has been with the Auburn company for 15 years, having started as a salesman, and for some time has been vice-president and director of sales. He has been for 10 years a member of the legislative committee of the National Automobile Chamber of Commerce.

At the same meeting W. C. McFarlane was elected assistant treasurer and assistant general manager.



J. I. FARLEY

OPENS NEW LARGE STORE

OMAHA, Sept. 18.—About 400 persons including a large number from out of the city, last week attended the formal opening of the Storz Western Auto Supply Co.'s new store at 408 S. Eighteenth street. The huge establishment, five stories and basement, was thoroughly inspected by the guests, who were personally invited by Arthur Storz, president of the company.

DODGE BRANCHES OUT

CHICAGO, Sept. 14.—Dodge cars which for years have been sold at only one place in Chicago, the Motor Row establishment of Dashiell Motor Co. at 2542 Michigan avenue, will hereafter be offered through two branches of the Dashiell company in addition to the main store. The branches, completely equipped for sales and service, are at 5725 Broadway and 5454 West Madison street.

39 AUTOMOBILES BURNED

BURLINGTON, Ia., Sept. 15.—Insurance will cover less than a third of the \$100,000 loss occasioned Sept. 1 by a fire in the Sheagren and Hunt garage here. Thirty-nine automobiles were destroyed. The building was 100x500 ft., of brick, erected at a cost of \$45,000 four years ago.

N. A. C. C. Discusses Plans for New York's Annual Show

Will Be Greatest Ever Held Under One Roof, Is Verdict After Miles' Talk

NEW YORK, Sept. 15—Directors of the National Automobile Chamber of Commerce at their September monthly meeting discussed show prospects and were thoroughly enthused over the New York outlook because of reports submitted by General Manager S. A. Miles. Decoration plans were gone over and the directors were told that the New York affair will be the greatest industrial exhibition ever held under one roof.

In order that the industry as a whole may get an idea of the immensity of the Eighth Coast Artillery Armory, located in the Bronx, it was decided by the directors to hold the annual drawing for space in the Armory instead of at the headquarters of the N. A. C. C. This meeting is the one open to all members and will bring together representatives of all the concerns in the Chamber. It will be held next month as usual.

In line with the show preparations, it is interesting to note that General Manager Alfred Reeves of the N. A. C. C., will address the Bronx Rotary Club next week, when he will tell the business men of the borough in which the next automobile show will be held, something of the magnitude of the proposition.

N. A. C. C. directors also appointed C. D. Hastings, president of the Hupp Motor Car Co., a director of the Chamber to fill the vacancy caused by the resignation of J. Walter Drake, now Assistant Secretary of the Department of Commerce at Washington.

Visitors at Iowa State Fair Greater Than for Many Years

DES MOINES, Ia., Sept. 14.—Even with two days of the exhibition marred by rain, visitors to the mid-season automobile show held in Machinery Hall at the Iowa State Fair, Aug. 22-31, numbered more than for several years past. Machinery Hall, covering approximately five acres at the fair grounds, had over three-fifths of its space devoted to the showing of automobiles, trucks, tires and accessories. Some truck manufacturers, marketing complete lines of farm machinery, had their truck displays in individual tents outside of the hall.

Some 75 models of passenger car, representing the efforts of 30 car manufacturers, were shown. Ten makes of trucks were exhibited in the hall in addition to the numerous displays outside of the building. Accessory displays were found along the "automobile row" of the hall and each of the three Des Moines tire factories had attractive booths.

Actual sales at the show were very gratifying, according to C. G. Van Vliet, manager of the exhibition. Some exhibitors averaged four and five sales daily all during fair week. Closed models were preferred by most buyers.

Statistics of the Tire Industry

NEW YORK, Sept. 14—According to the figures compiled by the Rubber Association of America, Inc., for the Bureau of Domestic and Foreign Commerce, shipments of pneumatic casings and inner tubes increased during July as compared with June, but shipments of solid tires decreased. Inventory and production of casings, tubes and solid tires were less in July than they were in June.

The following shows inventory, production and shipments by months:

		PNEUMATIC CASINGS			
		No. Mfrs. Reporting	Inventory	Production	Shipments
1922					
January	66	4,174,216	2,055,134	1,596,806	
February	66	4,691,329	2,084,308	1,562,365	
March	63	5,183,286	2,645,790	2,072,963	
April	65	5,464,336	2,401,187	2,086,651	
May	65	5,523,095	2,721,503	2,639,273	
June	64	5,042,147	2,838,890	3,133,260	
July	63	4,834,106	2,476,636	2,695,095	
August	63	4,829,392	2,905,209	3,029,823	
September	64	4,612,037	2,504,744	2,502,106	
October	64	4,682,958	2,674,662	2,588,770	
November	62	4,964,976	2,733,134	2,379,708	
December	59	4,599,208	2,656,942	2,934,079	
1923					
January	62	4,695,916	3,127,270	2,994,297	
February	60	5,224,387	3,217,987	2,588,639	
March	58	5,670,601	3,865,726	3,322,637	
April	56	6,088,272	3,539,326	2,976,160	
May	67	6,906,594	3,659,986	2,757,764	
June	55	7,040,600	2,956,943	2,502,185	
July	54	6,471,124	1,992,989	2,539,425	

		INNER TUBES			
		No. Mfrs. Reporting	Inventory	Production	Shipments
1922					
January	66	5,246,647	2,343,393	1,889,724	
February	65	6,141,956	2,596,774	1,702,583	
March	63	6,991,118	3,017,511	2,090,737	
April	65	7,230,096	2,650,573	2,329,343	
May	65	7,189,552	2,970,696	2,938,947	
June	64	6,186,534	3,130,629	3,973,679	
July	63	5,675,839	3,068,199	3,630,744	
August	63	5,207,228	3,808,224	4,220,055	
September	64	5,164,757	3,501,442	3,556,971	
October	64	5,488,033	3,787,758	3,420,680	
November	61	6,210,053	3,850,908	3,075,023	
December	59	5,732,125	3,411,074	3,825,949	
1923					
January	62	5,838,310	3,951,885	3,748,651	
February	60	6,771,958	4,039,202	3,001,697	
March	57	7,740,945	4,875,414	3,828,315	
April	55	8,394,184	4,259,558	3,535,635	
May	57	9,292,223	4,317,537	3,414,115	
June	54	8,924,326	3,590,011	3,581,060	
July	52	7,396,444	2,625,118	3,942,247	

		SOLID TIRES			
		No. Mfrs. Reporting	Inventory	Production	Shipments
1922					
January	11	181,769	40,224	33,294	
February	11	183,448	39,492	36,805	
March	11	182,197	49,433	48,350	
April	11	173,748	46,664	52,309	
May	11	170,904	57,640	60,711	
June	11	169,808	66,089	63,408	
July	11	176,375	71,505	60,425	
August	11	189,698	84,313	69,435	
September	11	200,016	82,767	66,797	
October	11	213,942	85,480	71,275	
November	11	234,684	85,775	61,466	
December	10	244,061	77,221	64,576	
1923					
January	11	262,462	83,343	60,611	
February	11	270,191	75,457	63,394	
March	11	265,843	79,788	77,144	
April	10	260,631	71,468	72,609	
May	10	268,323	77,288	67,147	
June	10	283,425	72,445	52,125	
July	10	263,891	42,345	45,219	

"Production" and "Shipment" figures cover the entire month for which each report is made. "Inventory" is reported as of the last day of each month.

"Inventory" includes tires and tubes constituting domestic stock in factory and in transit to, or at, warehouses, branches (if any), or in possession of dealers on consignment basis, and as a total represents all tires and tubes still owned by manufacturers as a domestic stock.

"Shipment" includes only stock forwarded to a purchaser and does not include stock forwarded to a warehouse, branch, or on a consignment basis, or abroad.

JORDAN SPECIAL DIVIDEND

CLEVELAND, Sept. 15.—A special dividend of \$5 a share on the common stock has been declared by directors of the Jordan Motor Car Co., the first paid on common since 1920. The regular quarterly dividend of 1½ per cent on the preferred also was declared. Both dividends are payable Sept. 30 to stockholders of record Sept. 15.

BATTERY DEALERS ORGANIZE

LOUISVILLE, Ky., Sept. 14.—"Free Service" was the subject of discussion by members of the Louisville Battery Dealers' Association, at the first meeting of that organization at the Hotel Henry Watterson.

A committee was selected to draw up the by-laws of the organization for the next meeting.

Packard Announcement Brings Building Figure to \$1,000,000

Atlanta Dealers and Distributors in Biggest Building Year in History

ATLANTA, Ga., Sept. 17—With the announcement last week by the Packard Enterprises of Georgia that the company will construct here one of the finest automobile buildings in the city, total construction by well known Atlanta distributors carried out this year reaches a figure approximating \$1,000,000, equal to the best year the industry has ever experienced in Atlanta in new construction of permanent automobile buildings.

The Packard has moved from 414 Peachtree St., to 469 Peachtree St., and will occupy the latter building until the new home is completed, about Feb. 1, 1924.

The Atlanta branch of Willys-Overland, Inc., has taken the building formerly occupied by the Packard, making an investment of several thousand dollars in improvements for a permanent home.

F. E. Maffett, Inc., Dodge Brothers distributors, has a \$150,000 building under construction on West Peachtree St., while the Oakland Motor Car Co., of Atlanta, also is building a new home at about the same cost.

J. E. Duffell, Studebaker dealer, moved into a new building he had constructed in West Atlanta, the early part of this month, this being the fourth new automobile building in that section for retail dealers constructed this year. A new building also has been constructed by D. C. Black, Buick retail dealer, at a cost of nearly \$100,000.

GETS VICTORY TRACTOR PLANT

PHILADELPHIA, Sept. 17—Levene Motor Co. announces it has taken over the plants of the Victory Tractor Co. and the American Axle Co. of Greensburg, Ind., and moved them to Philadelphia. The Levene company will continue to give service on tractors and vehicles equipped with American axles. Other tractor plants taken over by the Levene company recently are the Parrett plant at Chicago Heights, Ill., and the General Ordnance plant at Cedar Rapids, Ia. The Levene company is a general manufacturer of automotive repair parts.

CHICAGO DIRT TRACK RACES

CHICAGO, Sept. 17—Thirty-seven drivers participated in the three dirt track automobile races held yesterday on the Hawthorne track. The events and winners were: 20-mile free-for-all, won by John Boling in Dodge Special in 18:01 4-5; 40-mile championship for Ford cars, won by Esthan Wenneston in Nelson Special in 35:23 3-5; 40-mile championship for heavy cars, won by Cliff Woodbury in a Frontenac in 36:18 1-5.

Used Truck Dealer Held to Claim Made in Advertisement

Must Make Good on Warranty as Advertised Despite Waiver Clause in Sale Contract

CLEVELAND, Sept. 15—A ruling of more than ordinary importance to both automobile purchasers and retailers has been made by the Supreme Court of Ohio. The legal department of the Cleveland Automobile Club has broadcast it to owners in this city.

The court in this case, which dealt with misrepresentations that were made in an advertisement with respect to used and reconstructed trucks of a certain make, in effect revised the age-old doctrine of the law "let the purchaser beware," which means that when one goes out to buy an article he must use his eyes and voice and own sense to ascertain defects. The pronouncement of the court on this question, "Is it not high time that that doctrine, 'let the purchaser beware,' should be modified somewhat; at least that it should have no higher place than 'let the seller beware.' There is entirely too much disregard of law and truth in the business world today. It is time to hold men to their primary promises and engagements to tell the truth and to observe the law of common honesty and fair dealing.

"Such a change would not be so much in the line of revolution as in line of reasonable reform. Honest men need not fear it; dishonest men should be kept in fear of it."

In the case at issue, a truck company sued a customer to collect a repair bill on one of its trucks that had been bought after the customer read one of the company's advertisements as to guarantees. The company contended that the guarantee in the advertisement did not enter into the matter because the buyer when making the purchase entered into a contract, one clause of which provided 'All promises, verbal understandings or agreements of any kind that pertain to this purchase not specified herein, are hereby expressly waived.' The court of appeals upheld this contention of the truck company, but the supreme court reversed, and it is now the law of Ohio.

The supreme court said: "The buyer was attracted by the truck company advertisement, which said, 'Do you know that a high grade used truck, rebuilt and renewed, is a better buy and of more substantial value than a cheap new truck? A rebuilt truck is practically a new truck as far as wearing qualities and operating efficiency are concerned. A rebuilt truck carries the same warranty as a new truck.'"

On the point of warranty, the court said: "When a man buys a horse he hardly needs a warranty that it is a horse, or that it is not a mule or a camel, although they belong to the same general family of burden bearers; and if there was such a warranty it would be equal folly to undertake to determine whether or not it was express or implied.

Ford Motor Co. Revises Industrial Map for Exhibit at Michigan State Fair

DETROIT, Sept. 17—As part of its exhibit at the Michigan State Fair, Ford Motor Co. has revised its industrial map of the United States, showing the divisions according to sales territories of its many branches, their annual sales for the year to Sept. 1, the daily capacity of each of its assembly branches and manufacturing plants, and the number of retail sales agencies operated by each branch.

There are 29 assembly branches and five sales branches now in operation in the United States. There are 10 foreign assembly branches and nine foreign sales branches. A compilation of the annual sales shows domestic business in

Ford cars and trucks to be 1,558,239 for the year to Sept. 1, and foreign business of 126,751.

The Ford exhibit at the fair included all of its products from the rough timber and mineral stages to the finished automotive products and the numerous mineral and chemical by-products. There were also exhibits by the Henry Ford Hospital and Trade School. Aside from the Ford exhibit the automotive section of the State Fair consisted principally of accessories and vehicles, such as trailers, intended for use in conjunction with Ford products.

Statistics outlined on the Ford map as relating to retail sales were as follows:

Assembly Branches	Annual Sales	Daily Output	Dealers
Atlanta	45,709	250	244
Buffalo	52,292	300	316
Cambridge	62,048	340	395
Chicago	82,945	300	415
Cincinnati	38,959	200	207
Cleveland	49,897	170	198
Columbus	41,484	250	243
Dallas	51,629	150	234
Denver	22,763	150	169
Des Moines	44,830	400	338
Detroit	82,544	500	405
Houston	43,768	225	240
Indianapolis	53,003	300	235
Kansas City	68,435	275	479
Los Angeles	50,131	200	197
Louisville	33,674	200	168
Memphis	48,910	105	263
Milwaukee	37,638	200	283
Minneapolis	49,755	400	459
New Orleans	43,105	225	201
New York	80,675	800	447
Oklahoma City	48,059	160	254
Omaha	38,080	160	340
Philadelphia	69,665	325	293
Pittsburgh	44,044	250	256
St. Louis	52,451	300	283
San Francisco	34,630	200	296
Seattle	23,297	125	199
Portland	12,930	80	101
Sales branches (United States):			
Charlotte	66,539	.....	345
Fargo	15,759	.....	277
Jacksonville	31,394	.....	165
Salt Lake City	9,113	.....	120
Washington	28,094	.....	176

These figures indicate annual sales in the United States to Sept. 1 of 1,558,239 Ford cars and trucks.

United States on the basis of the above figures is 7,540. Total number of dealers in the United States is 9,230.

Canada and Foreign Sales	Annual Sales	Daily Output	Dealers
Assembly Branches			
Buenos Aires	11,846	100	316
Barcelona	6,003	.....	148
Copenhagen	13,505	100	192
Manchester	27,214	240	.....
Montreal	6,566	70	99
Sao Paulo	3,481	45	248
Bordeaux	10,569	50	317
Toronto	12,277	150	111
Winnipeg	2,646	100	93
London, Ont.	4,362	35	60
Sales branches:			
Calgary	2,468	.....	101
Regina	3,317	.....	124
St. John's	2,401	.....	55
Vancouver	3,088	.....	35
Windsor	2,611	.....	20
Trieste	1,731	.....	140
Montreal	868	.....	124
Antwerp	6,192	.....	123
Havana	704	.....	41
Miscellaneous foreign sales	4,902	.....	80
Total annual foreign sales on basis of above is 126,751.			

"It is quite conclusive that the language in the written order or contract of sale—all promises, verbal agreements or agreements of any kind that pertain to this purchase, not specified herein, are hereby expressly waived—relates solely

to any special contracts or arrangements expressly made by the parties outside of the general custom or usage in the sale of goods. It in no way nullifies or negatives the things or matters set forth by the company in its advertisements."

Open Show of Automotive Accessories Being Promoted

Group of Manufacturers Leases Chicago Armory and Plans Exhibit at Same Time as That of A. E. A.

CHICAGO, Sept. 17—Promotion of an automobile accessory show to be held in Chicago at the time of the Automotive Equipment Association's show, Nov. 12 to 17, and open generally to manufacturers who are not members of the A. E. A., has been undertaken by Robert M. Jones and a number of associates who are interested in the manufacture of automotive accessories.

Under the name of the Manufacturers Auto Accessory Exhibit, Jones, as manager, has sent circulars of information and blank contracts to several hundred manufacturers. Jones and his associates have leased the First Infantry Armory for the show and have arranged for 200 exhibit spaces. The prices have been fixed at from \$200 to \$300 for spaces measuring 8 by 10 by 12 feet.

This show, Jones said, is intended to provide an opportunity for automotive manufacturers who are not eligible to enter the A. E. A. show, to exhibit their products under one roof at a time when jobbers and buyers are congregated in Chicago. Exhibition at the A. E. A. show, as has been the custom for years, is restricted to manufacturers who are members of the association and last year the attendance was limited to members, which meant that only those jobbers who were affiliated with the association could view and buy the products displayed.

As a result of these restrictions it has been the custom of independent manufacturers to engage hotel rooms for the period of the A. E. A. show and invite the trade to see their products in these rooms. It is these exhibitors that Jones hopes to bring together in the Armory show, to which the public would be admitted.

Jones said that considerable interest has been shown in response to his first circular, but that final decision as to the holding of the show depends on whether or not enough contracts are signed to make it pay expenses. Jones is a manufacturer of automobile accessories, being president of the Process Products Co. of 508 South Sangamon street, Chicago.

Ford Produces 40,979 For Week Ending September 11

DETROIT, Sept. 15—Ford Motor Co. for the week ending Sept. 11 produced 40,979 cars and trucks for the domestic market, an increase of 7,514 over the week previous, which was a five-day week, due to the Labor day holiday. Tractor production was 1,786 and Lincoln output 196.

Demands from dealers continue to run well in excess of production capacity,

though not as large as in the early months of the year. In the current month dealers have filed orders approximating 225,000. The factory notes a steady increase in the enrollments under the weekly payment plan and looks for large increases in the fall and winter months as the rush for immediate deliveries shows a tendency to subside.

Although the number of persons buying cars on the weekly plan is large, officials declare there would be many more thousands enrolled only that dealers were unable to devote any large extent of time to it, owing to the pressure of regular business. It is planned to make special efforts on enrollments during the fall and winter months to line up a large volume of business for the early part of the year.

September Production For Hupmobile Set at 4400

DETROIT, Sept. 15—September production of Hupp Motor Car Co. has been set at 4,400, with the factory operating six full days a week and an hour overtime each day. On the basis of operations as outlined by the volume of business developing from the new models, the company expects to pass its last year's production total by Nov. 1. The mark of 40,000 set for this year will be exceeded, according to the factory's ability to produce.

Orders placed by distributors and dealers for the balance of the year require the speeding up of production to its fullest degree, C. O. Hutchinson, sales manager, said. Additions to the company's body plant at Racine have made possible an extensive addition to its closed body supply, and the company will be in much better position to meet closed body business than last year.

AIR SPEED OF 244 M. P. H.

NEW YORK, Sept. 17—Preparing for the Pulitzer cup races which are scheduled for Oct. 1-3 at St. Louis, Lieut. H. J. Brow of the Naval Air Service showed an officially recorded speed of 244.15 m. p. h. over a measured one kilometer course at Mitchel Field, near Mineola, L. I., last Thursday. In this demonstration he piloted a Navy-Curtiss racing plane and beat the previous best mark of 238 m. p. h., made only a few days before by Lieut. L. H. Sanderson of the United States Marine Corps.

Brow established his record without taking advantage of a drop to gain momentum at the start. On one leg of the course, with the wind on his back, Brow is credited with a speed of 285 m. p. h., the fastest man ever has traveled. A feature of the trial was the landing speed of 70 m. p. h., for which the use of double camber or convex wings is given credit.

\$50,000 TO AID JAPANESE

NEW YORK, Sept. 15—The General Motors Corp. has contributed \$50,000 to the Japanese relief fund.

Increase of 764,052 in Registrations on July 1

Bureau of Public Roads Announces Total Registration at 13,002,427

WASHINGTON, Sept. 15—Figures compiled by the Bureau of Public Roads shows an increase of 764,052 in the total registration of motor cars and trucks on July 1 as compared with Jan. 1. The statisticians explain that in arriving at these totals allowance has been made for re-registration and non-resident registrations as far as possible. The total registration of cars and trucks amounted to 13,002,427 on July 1.

Trucks and commercial cars now number 1,371,058, an increase of 92,254 since Jan. 1, and the rate of increase is greater than that for the total registration of all vehicles.

The table issued by the bureau shows registration as follows: Private passenger cars, 11,571,181; taxicabs, buses and cars for hire, 60,188; trailers, 24,111, and motorcycles, 141,521. The numbers of the last two classes of vehicles are not included in the registration total.

The total registration revenue reported is \$167,240,937, of which \$134,733,325 is applicable to road work by or under the supervision of state highway departments.

In 27 states gasoline taxes were collected, amounting to \$8,669,174, of which \$4,977,864 is applicable to road work by or under the supervision of state highway departments. Revenue from this source will be materially increased in the latter half of the year when the gasoline tax laws of several additional states go into effect.

SPARK PLUG TAX REMOVED

WASHINGTON, Sept. 15 — On the theory that spark plugs are not essentially automobile fittings and are also generally used in other industries, the Internal Revenue Bureau has removed the excise tax of 5 per cent, following out the precedent established in the case of piston rings and bearings.

This decision means a comfortable saving of around \$500,000, it being estimated that the annual plug production in this country runs between fifty and sixty millions. In the case of plugs furnished car manufacturers for standard equipment, this tax has been included in the price of the car and has been paid by the car manufacturer.

5,105 SALES IN ST. LOUIS

ST. LOUIS, Sept. 15—According to figures issued by the deputy state license office there were 5,105 passenger cars licensed in St. Louis during the month of August, fewer than those licensed in July, when 6,970 licenses were issued. The total number of passenger cars now licensed here is 95,301, as against 77,678 licensed during the whole license year of 1922.

BUSINESS NOTES

C. Milton Schelop, St. Louis, representative of the Eclipse Specialty Manufacturing Co., Chicago, producer of the I. X. L. timer for Ford cars, has moved his offices from 1421 Locust street to 3561 Lindell boulevard, St. Louis.

The National Can Corp. has sold its can and collapsible tube business to the Continental Can Co. of New York to permit of definite expansion of its facilities for the manufacture of radiators. Neil McMillan, president of National Can, said of the sale that it was compelled by the growth in demand from the automotive industry for the company's radiators and its desires to expand in keeping with the industry's expansion.

The National Convertible Body Co., formed recently at Knoxville, Tenn., will establish at once a plant for the manufacture of convertible bodies for Ford cars, having an initial capacity of 20 bodies a day, it has been announced by B. D. Hammond, president of the company.

The A. E. Hill Manufacturing Co., operating a machinery plant in Atlanta, has purchased patent rights on what is known as the Hilco reflector, and will start manufacture of the new product at once. The Hilco reflector was invented and patented recently by C. N. Weems, of the Southern Bell Telephone Co., of Atlanta, and is claimed to provide a more even, perfect and well distributed driving light for automobiles than reflectors now in use.

The eight and a quarter acre tract in East Moline, Ill., known as the Midland Motor Co. plant, has been purchased from the Moline Plow Co. by Louis Livingston and leased to the

Daniel Boone Woolen Mills Co. for factory purposes. The factory was erected in 1906 by the Deere-Clark Motor Co., but two years later was sold to the Midland Motor, which after two years failed. During the war the plant was leased by Deere & Co., which later assigned to Moline Plow, which in turn made some trucks there, chiefly for experimental purposes.

The Harrison Radiator Corporation has been granted a permit to erect a \$300,000 addition to its plant on Walnut, Elm and South streets, Lockport, N. Y. The addition, with machinery and other equipment, will cost the company more than \$500,000. The new structure will double the capacity of the present plant. The Harrison Radiator Corporation is a subsidiary of the General Motors corporation.

Arrangements have been made by C. G. Spring Co. to sell a substantial note issue to bankers and to privately place a small additional amount of capital stock. All accumulated preferred dividends have been ordered paid. The financial program when completed will give the company ample working capital to handle expansion of its business.

The Chicago office of the Brown-Lipe Gear Co., in charge of Henry A. Pierce, has been moved from 1712 South Michigan avenue to room 1028 Standard Oil Building, 910 South Michigan avenue.

The Paul Rubber Co., of Salisbury, N. C., is establishing a number of community tire factories in North Carolina cities. Raleigh, Asheville, High Point and possibly other cities have been selected for these factories.

Increased Use of Cars Is Shown by Bureau of Mines

WASHINGTON, Sept. 19—The increased use of automobiles is reflected in the report of the Bureau of Mines on gasoline stocks as of Aug. 1 showing a decrease of 98,193,788 gallons of gasoline from stocks held July 1, when 60 days supply of gasoline was available.

Estimated at the July rate of consumption the gasoline at refineries in this country on Aug. 1 constituted 54 days supply. However, these figures show that the stocks on hand exceeded those of Aug. 1 last year when 42 days' supply of gasoline was in storage.

Domestic consumption of gasoline during July amounted to 674,019,467 gallons, an increase of 40,516,877 gallons over the June consumption. Imports of gasoline in July amounted to 22,634,719 gallons while exports were 83,721,199 gallons. The output of gasoline in July was 636,912,059 gallons, a daily average of 20,545,550 gallons. Stock on hand July 31, were 1,165,389,340 gallons.

QUEBEC SALES GOOD

QUEBEC, Canada, Sept. 17—Dealers in automobiles in this city are enjoying one of the best seasons ever experienced. Not only have more cars been sold than ever before, but more of the higher-priced type have been called for. According to recent official figures, the number of cars per head of population (1 to 22) is greater in Quebec city than in any other town in the Province of Quebec, and there are some 600 motor cars in the city than at this time last year.

50,000 "DEATH-TRAPS" IN U. S.

WASHINGTON, Sept. 15—There are approximately 50,000 "death-traps" in the United States according to a survey, just completed by the United States Bureau

of Public Roads, of grade crossings where motorists have been killed and injured or where they are daily subject to injury or death.

Of this number the Bureau has ordered that 214 of the most dangerous, located in 35 states, be changed at once by either tunneling under the railroads or bridging over them.

USED CAR AUCTION SUCCESS

CHICAGO, Sept. 18—The Used Car Dealers' Association of Chicago conducted a public auction of used cars at the Coliseum Saturday. All the cars were displayed on the floor of the Coliseum and an auctioneering company was employed to conduct the sale. About 150 cars were sold and prices were considered fairly satisfactory for the standard desirable merchandise, but some of the less desirable models were sold for very low prices. Dealers bought quite a number of cars. The association proposes to hold a similar auction about once a month during the fall and winter in order to help move accumulating stocks of used cars.

360,937 CARS IN FRANCE

PARIS, Sept. 4 (By Mail)—An increase of 73,755 automobiles in service in France is shown for the year 1922, according to government figures just issued. The total number of automobiles in France at the end of the year 1922 was 360,937, this including passenger cars and trucks, but excluding motorcycles and sidecars. On the latest census returns the number of automobiles per thousand inhabitants is 9.2, compared with 6.3 twelve months earlier. The department having the greatest proportion of automobiles is the Aisne, with 16.9 per thousand. The Seine region, which includes the city of Paris, follows with 16.5 per thousand.

"Races" on the Highways in Early Morning Warred Against

Motor Vehicle Registrar Tabooes the Speed Enthusiast; Revokes Licenses

BOSTON, Sept. 17—Frank A. Goodwin, motor vehicle registrar, has declared war upon motor races on the public highways in the early morning hours, and as a warning has suspended the licenses of participants and the firm doing business in one case and of the owners of the cars in another.

He investigated a case where two motorcycles participated in a special race on the Andover road last Sunday morning at which speeds of 94 and 96 miles an hour were recorded for a two mile stretch. As a result the dealers plates of Phillips Brothers, with places of business at Lynn and Danvers, have been recalled and this revokes their right to demonstrate machines, practically putting them out of business. The registration and license of Zarie J. Amoro were suspended; and the licenses held by George W. Stafford and Richard S. Phillips were also suspended.

At Taunton the licenses of Nelson Broadhurst and James Coe were suspended following a race between their cars. "These midnight and early morning races are becoming a regular thing among dealers anxious to sell their machines," said Mr. Goodwin, "but they are not going to be permitted in Massachusetts if I have to put the people connected with them off the highways."

Drives Motor Cycle 100 Miles in One Hour and 11 Seconds

KANSAS CITY, Sept. 15—The first motorcycle races on the Kansas City Speedway, held on Labor day, drew a crowd of 15,000. Besides the field of professional racers, there were 25 amateurs of Missouri and Kansas who qualified for the special championship of this district. The 100-mile national championship was won by J. Branson of Kansas City, on a Harley-Davidson, his first professional race, in 1 hour 11 seconds, breaking the world's record. John Krieger of Santa Ana, Cal., on an Indian, was second, 1 hour 12 seconds, and Ralph Hepburn, Los Angeles, third, 1 hour 13 seconds, on a Harley-Davidson. There were 12 entered, and nine finished. Jim Davis of Columbus stopped twice with engine trouble, but finished. "Red" Parkhurst of Milwaukee was forced out by a blowout, on the forty-third lap. A. M. Blakeley of Kansas City was ruled out on the 23rd lap, and John Bagley of Omaha quit at the 65th lap.

DEALERS BUY SHOW TENT

HARRISBURG, Pa., Sept. 14—The McKean County Automobile Dealers' Association has purchased a tent, 50 by 200 feet, in which to hold an automobile show at the McKean County Fair. An auction of used cars will be held daily.

CONCERNING MEN YOU KNOW

Howard B. Armstrong has resigned as sales manager and vice-president of the firm of O'Brien & Hoover, Twenty-second and Race streets, Philadelphia, with which tire distributing house he had been for the last nine years, going there as a salesman. O'Brien has not announced his plans for the future.

B. E. Stinson, zone sales manager at Minneapolis for the Chevrolet Motor Co., has resigned because of ill health and has been succeeded by L. B. Barnes, formerly assistant sales manager at the same office.

Robert E. Capp has purchased a half interest in the Nichols Overland Co., at Clarence, Mo.

Julian Grace, foreman of a large automobile body manufacturing plant at Los Angeles, Cal., and Miss Mary Bush, of Clinton, Mo., were married at the Missouri home of the bride recently. They have departed for California to make their home.

B. A. Rupprecht has been appointed sales manager of the new selling zone known as No. 22, recently established at Louisville, Ky., by the Chevrolet Motor Co. The new branch was opened for the purpose of better distribution of Chevrolet cars in southern Indiana, central Tennessee and central and western Kentucky. It is located at 201-203 East Broadway.

The Doss Rubber & Tube Co., of Atlanta, manufacturers of Cord tires and inner tubes, announces the appointment of D. V. A. Smith, who has been prominently identified with the manufacturing end of the industry for some years as sales manager.

The Perfection Battery & Light Co., 755 Whitehall street, Atlanta, one of the largest

battery manufacturing plants in the south, announces the appointment of L. Fort Turner, of Atlanta, as sales manager.

Douglas Andrews has been appointed traveling sales representative of Wills Ste. Claire, Inc., working on general assignment from the Marysville office. Andrews is well known in the industry, having been with Maxwell, Hudson and Liberty.

A. E. Aveyard has been placed in charge of the office which the Campbell-Ewald Co. has opened at 604 Mutual Home building, Dayton, O., which will assist in handling such automotive accounts as the Dayton Engineering Laboratories, Delco-Light Co., General Motors Chemical Co., and the General Motors Research Laboratories. Aveyard has been assistant manager at the Chicago branch and his place in Chicago will be taken by Leslie Hannah, formerly general manager of the Hannah-Crawford agency of Milwaukee.

Albert Champion, president of the A. C. Spark Plug Co., of Flint, Mich., is about to sail for Europe, to be gone two months, in which time he will visit his factories in France and England.

H. A. Bruno has resigned his connections with the Aeromarine Airways, Inc., to become associated with the Netherlands Aircraft Manufacturing Co., of New York, which represents the Fokker plane.

J. H. Brozek has severed his connection with the Rickenbacker Motor Co. and has accepted the appointment of direct representative of the Eco Motors Co., Ltd., of Melbourne, Australia. He will have offices and warehouse at 3566 Denton avenue, Detroit.

Production Records Made in Many Other Industries

BUFFALO, N. Y., Sept. 18—Julius H. Barnes, president of the Chamber of Commerce of the United States, in an address here before the National Association of Insurance Agents, cited ten production records that have been established in industry during the last few months. They are:

- The largest pig iron production;
- The largest cotton consumption;
- The largest steel ingot production;
- The largest crude oil production;
- The largest automobile and truck production;
- The largest residential construction;
- The largest production of locomotives;
- The largest volume of mail-order sales;
- The largest volume of retail sales;
- The largest volume of railroad car loadings.

Barnes also made several significant comparisons of changes that have taken place in the United States since the pre-war year of 1913. The more important of these comparisons are:

The population of the United States has increased fourteen millions of people, with their enlarged requirements.

"The annual national income has increased from \$34,000,000,000 to \$50,000,000,000.

"The aggregate savings deposits have increased from \$6,000,000,000 to \$14,000,000,000.

"The deposits in national banks have increased from \$6,000,000,000 to \$17,000,000,000."

WANTS GREEN TAIL LIGHTS

ST. LOUIS, Sept. 19—The St. Louis Safety Council recently issued a statement in which the suggestion was made that tail lights on automobiles be green in color instead of red. "There have been trains stopped by the red tail lights

of vehicles on highways near railroad tracks," the statement points out.

Automobile dealers here feel there is some merit in the suggestion and Robert E. Lee, secretary of the dealers' association, says he heartily concurs in the idea that it will be helpful in averting accidents.

The campaign being conducted by the automobile dealers and the Safety Council against glaring headlights has had excellent results and the number of glaring headlights on the streets in St. Louis and in the vicinity of the city has been appreciably reduced.

J. AMORY HASKELL DIES

NEW YORK, Sept. 15—J. Amory Haskell, vice-president of the General Motors Corp. and also of E. I. du Pont de Nemours & Co., died last week at his country home, Oak Hill Farm, Red Bank, N. J., aged 62. He had been in ill health for the past two years, but had maintained his General Motors activities to the end. Formerly he had been president of two of the General Motors subsidiaries, the export and acceptance corporations, but about a year ago he resigned these positions to devote himself to the parent company, of which he was a member of the executive committee at the time of his death.

INCREASE IN TRACTOR SALES

ATLANTA, Ga., Sept. 14—An increase of 10.9 per cent in tractor and power farming sales in the southeast during July, 1923, as compared with July, 1922, is shown in the monthly report of the Federal Reserve Bank of Atlanta, issued Sept. 1. An increase of only 2 per cent is shown in July as compared with June, but this is nearly 25 per cent greater than May sales, while jobbers state that August sales will be still better when the figures are all in.

Deemster Corp. of America May Locate in Motor Capital

Detroit Concerns Have Made Several Propositions to President Julius Keller, Jr.

NEW YORK, Sept. 14—The Deemster Corp. of America, organized a few months ago to build the English Deemster car in this country, may locate its plant in Detroit instead of Hazleton, Pa., as originally intended. Propositions from two or three Detroit concerns have been received by President Julius Keller, Jr., which are being given consideration at the present time.

George F. Summers of England, who was vice-president of the American company when it was first organized, has retired from the American concern and the latter's plans have been changed materially. Because of the Detroit propositions, President Keller has decided to postpone production and instead of bringing out the first of the American Deemsters in December, it is expected that the first ones will come out in March. Following their introduction, production will be pushed and it is expected that in the first year 6000 cars will be manufactured.

Originally it was planned to ship all of these abroad to meet the European demand, but now it is announced that 40 per cent of the first year's production will be sold in this country, the remainder going to fill English and Continental demands.

The Deemster, long a popular low priced lightweight English car, will be built to sell under \$1000 in this country. It will carry a 12 h.p. four-cylinder engine, which is said to develop 50 h.p. at maximum speed. A mechanical feature will be a three-ball-bearing crankshaft and the weight of the car will be about 1250 pounds. Great economy in fuel consumption is claimed and President Keller says that a guarantee of from 35 to 40 miles on the gallon will be given, while a maximum speed of 60 miles will be guaranteed also.

BETTER SPEEDOMETER SERVICE

FLINT, Mich., Sept. 15—The establishment of 70 nationally located speedometer service stations by United Motors Service, Inc., is announced by the AC Spark Plug Co., manufacturer of the AC speedometer. Additional stations are being established rapidly. These stations will meet the need for prompt and efficient speedometer service. They are all equipped with the parts, special tools and machinery required to handle this work properly.

RHODE ISLAND DEALERS MEET

PROVIDENCE, R. I., Sept. 17—The first fall meeting of the Rhode Island Automobile Dealers' Association was held today at the Annawan Club, Rehoboth, Mass. The members fished in the afternoon and had dinner at 6 o'clock, after which business was discussed.

IN THE RETAIL FIELD

Organization of the Velie Motor Sales Co., of Dallas, Tex., has been completed. The company will take care of the sales and distribution of the Velie cars in Dallas and North Texas. H. F. Herbert is manager.

Earle M. North, of Fort Worth, Tex., has purchased the Studebaker agency for that city and district from the George-Crossman Co. In buying the agency North also purchased the building which has housed the agency for some time. Rodney Crossman, member of the old concern, will remain with North as sales manager.

The Wellston-Buick Co., St. Louis, has moved from 6500 Easton avenue to 6517 Easton avenue. J. J. Demuth, president of the company, announced the appointment of Al Joerding, formerly shop foreman of the Vesper-Buick Maintenance Division, as service manager and shop foreman of the Wellston-Buick Co.

The Big Four Auto Co., St. Louis Chevrolet dealer, has opened a clubhouse on the Meramec River for its employees. It was opened last week with a parade from the company's headquarters at 224 South Jefferson avenue.

V. George Harper has been appointed export sales manager for the Victor Motor Truck Co. He has traveled extensively in Europe representing American interests.

Among new Nash dealers are the following: Porter-Gilbert Motor Corp., Roanoke, Va.; Leavenworth Garage, Leavenworth, Wash.; Okanogan Motor Co., Okanogan, Wash.; McDonald Sales Co., Bloomer, Wis.; Log Tavern Garage, Log Tavern, Wis.; A. C. Hamilton, Golden, British Columbia, and Felix Charette, Grand Falls, New Brunswick.

The contract has been let for a new garage and sales agency of two stories at 142 Grove avenue, Elgin, Ill., for the O. E. Salisbury Motor Car Co., distributor of the Willys-Knight, Overland and Reo cars. The plant of the Salisbury company has been outgrown and larger quarters are necessary. The old building will be occupied only as a repair and storage department.

The Beam Motor Co., Durant and Star dealer at Shelby, N. C., has moved into a new building, with increased space for all departments.

Aberdeen Motor Car Co. has been chartered at Aberdeen, N. C., with an authorized capital of \$50,000. Geo. B. Martin and others are incorporators.

Velie Motor Sales Co., of Charlotte, N. C., has been chartered with an authorized capital stock of \$100,000. Morris R. Guyer, of Charlotte, and J. M. and L. M. Simmons, of Elkins, N. C., are the incorporators.

R. B. Redwine, Jr., has bought the interest of Phil Alcott in the Monroe Motor Co., at Monroe, N. C., and will continue in complete management of the company. The company handles Studebaker and Dodge cars.

A factory branch will be opened in Waco, Tex., by the Reo. It will be known as the Reo Motor Car Co., of Texas. T. D. Bryant, one of the leading automobile men of Central Texas, will be manager.

The Universal Auto Accessories Co. has been chartered at Cleveland, O., with a capital of \$10,000 to buy and sell tires and accessories.

The Springfield LykGlas Auto Renewal Co. has been incorporated at Springfield, O., with a capital of \$5,000 to paint and repair motor vehicles.

The following dealers have been appointed to handle the Nash: Yale Nash Motor Co., Yale, Okla.; Nash Brock Motor Co., Stillwater, Okla.; Egypt Garage, Egypt, Pa.; Kennedy Motor Co., Charleston, S. C.; Motor Supply & Repair Co., Conway, S. C.; Leavitt-Heyler Nash Co., Inc., Sioux Falls, S. D.; Burns Auto Co., Avon, S. D.; P. Blanchard & Sons, 201 E. Oak street, Palestine, Tex.; O. A. Murdock, Jr., Beaver City, Utah; B. O. Stevens, St. Albans, Vt., and R. E. Gound, Glasgow, Va.

The Halloran-McLean Tractor Co., now located at 650 Marshall avenue, Memphis, Tenn., will have a new building on the south side of Butler avenue, between Second and Third. Architects are completing the plans for a \$25,000 structure.

Organization of the Southern Motor Car Co., at Memphis, Tenn., was concluded last week by the election of Jas. M. Walker, president; R. V. Price, vice-president; Sam B. Hirsh, secretary-treasurer. The new \$100,000 company takes over the Cadillac agency for Memphis and certain sections of the tri-states. Steve H. Butler, former Cadillac agent, will devote himself to the Southern National Bank of which he is president.

The work of enlarging the building of the Pierce-Tenner Tire Co. at 542 College street, Springfield, Mo., is under way. The building is being constructed of brick and will be used for a public garage and storage purposes.

Samuel Cutler, former manager of the parts department of the Elmer Automobile Co., Ford dealer at Hartford, Conn., has left that concern to embark in the sale of genuine Ford parts on his own account. He has opened a store on upper Trumbull street.

The Moerschell Electric & Auto Co., for years located at 2944 Locust street, St. Louis, has moved to commodious quarters at 716 North Euclid avenue where it will sell, in addition to other lines, the Willard battery.

The annual sales gathering of F. W. Williams, Paige and Jewett distributor in northern Connecticut, was held at Lake Compounce Monday, Sept. 17.

There were 423 Buick cars sold in St. Louis and vicinity during the month of August, according to figures of Vesper-Buick Co., St. Louis distributor. Of this number the retail sales department of Vesper Buick sold 109; Kuhs-Buick, 92; South Side Buick, 47; East Side Buick, 47; West Side Buick, 40; Carondelet Buick, 36; Jakes-Buick, 16, and the E. A. Dodge Co., Granite City, 6.

Elmore & Sons, late of Tuscola, Ill., have taken over the Studebaker distribution in Decatur, Ill., and will have the Macon and adjacent county territory.

R. C. Emerson, Decatur, Ill., has purchased the Lefever garage, corner of William and Fifth streets, and will do a general repair and storage business.

The Kimball-Cadillac Motor Car Co., Joliet, Ill., has leased the building at 512 Cass street and will occupy it, following some alterations and various improvements. The building was formerly occupied by the Central Garage Co. which has retired from business.

Charles Rose has opened a garage in Maryville, Mo., and also will do all kinds of automobile repairing.

The Dodge Motor Co., of Kirksville, Mo., of which A. T. Tucker & Co. are the distributing agents, suffered a loss of \$35,000 in a fire that destroyed a portion of the business section of Kirksville. Two fires there in two days in the business section destroyed several of the largest business blocks there and entailed a loss of \$425,000 in property.

Blackstone Smith and Edward Dederer have formed the Kane County Auto Sales Co., and have opened a sales agency at Lincoln and New York streets, Aurora, Ill. They will distribute the Durant and Star cars in the Kane county territory.

R. Joerger, Pekin, Ill., distributor of the Overland car, has leased the building at 354 Margaret street and will vacate the former plant at 225 Court street, as it is too small.

The Wienold Sales Co., 710-714 East Adams street, Springfield, Ill., has been appointed distributor of the Rickenbacker car in the Sangamon county territory.

The Stuart Auto Supply Co. has been organized in Peoria, Ill., and has opened an accessory store at 505 Fulton street. The firm is composed of Benjamin Stuart and John Jacobson.

Charles L. Dickerson, Clinton, Ill., has broken ground at 303 East Madison street for a modern garage which will be one of the largest plants in that city. He hopes to have the building ready for occupancy by Nov. 1.

The Lewis Automobile Co., Chandler distributor in St. Louis, has opened a used car salesroom on Olive street just west of Vandeventer avenue. C. H. Austin is in charge of the branch.

The Anderson-Strauss Co., distributor of the Gray car in St. Louis territory, has opened a branch in Kansas City for the distribution of the car in Kansas City, Kansas and Oklahoma, and a number of counties in western Missouri. Laurence Strauss is manager of the new branch.

Sam Wasley, proprietor of the Wasley Motor Sales Co., Kewanee, Ill., has been made Reo agent in that city and territory.

R. Joerger, of the Pekin-Overland Co., Pekin, Ill., has leased the garage at 354 Margaret street, recently vacated by Robert Farlin, and will occupy it Sept. 15. Farlin has purchased the Palace garage on Elizabeth street and the present Joerger location, 225 Court street, will be occupied by Darche Bros., Maxwell distributor.

The Colonial Motor Car Co., Inc., with newly opened salesrooms at 2376 Grand Concourse, Bronx, New York City, will handle the Peerless 8-cylinder line in the territory, taking over the recently formed Bronx Peerless Co., with James T. Martin, for the past two and a half years with the Roamer Co., of New York, as president and general manager.

Recent new garage and automobile companies in the southeast are announced as follows: Calhoun Tire & Service Co., Columbia, S. C., with

Milton Makes New 1-Mile Record of 42.28 Seconds

SYRACUSE, N. Y., Sept. 17—A new record for one mile on a dirt track was established here Saturday by Tommy Milton, who was officially timed at 42.28 seconds for one lap of the 100 mile race under sanction of the American Automobile Association.

Milton established another record, doing the 100 miles in 1:15:00.33, an average of 79.97 m. p. h. The previous record for 100 miles on a dirt track, recognized by the A. A. A., was 1:29:9, made July 4, 1919, at Phoenix, Ariz., by Eddie Hearne. It is expected that the records made here will be officially recognized by the contest board of the A. A. A.

The list of entries for the race read like that of an Indianapolis event. Following is the list of drivers finishing and their times:

Tommy Milton, H. C. S. Special.....	1:15:00.33
Harry Hartz, Durant Special.....	1:16:52.70
Ira Vail, Durant Special.....	1:18:24.53
Ralph DePalma, Dusenber Spec.....	1:19:20.57
Eddie Hearne, Durant Special.....	1:19:25.37
Frank Elliott, Elliott Special.....	1:21:02.25
Leon Duray, Duray Special.....	1:23:27.11
L. L. Corum, Durant Special.....	1:26:26.58
Jerry Wonderlich, Durant Spec.....	1:28:32.88

ELGIN SERVICE MANAGER

INDIANAPOLIS, Sept. 14—Elgin Motors, Inc., has announced the appointment of O. A. Hoffman as service manager in complete charge of service. Hoffman has had extensive experience in service. For four and a half years he was with Goodyear Tire as special representative on development and service, and for a year and a half acted as service manager of the Duesenberg Automobile & Motors Co.

\$25,000 capital; Broadway Service Station, Lenoir City, Tenn., with \$10,000 capital; Central Garage, Sarasota, Fla., with \$10,000 capital; Fred B. Crafts Co., accessory dealers, West Palm Beach, Fla., with \$25,000 capital; Harris-Bentley Motor Co., exclusive Ford service station, 96 Houston street, Atlanta; Charlotte Republic Truck Co., distributors of the Republic truck, Charlotte, N. C., with \$50,000 capital.

R. M. Burr, Jr., who has been in the automobile business in Atlanta for several years, has been named sales manager for the Porter-Mincham Co., 520 Peachtree street, Atlanta, Hudson and Essex retail dealers in the Atlanta territory. Burr was formerly connected with the Hudson factory.

V. V. Goddard has been elected president of the Hall Motor Car Co., Holyoke, Mass., to fill the vacancy caused by the recent death of Oliver G. Hall, for many years known as one of the leading Dodge dealers in that section. Arthur Hall has been made secretary and will succeed his father as service manager, while Roy Hall will act as sales manager.

William J. Boettger has purchased the automobile business of M. Klein at Correctionville, Ia., and is now in charge.

Owen Sammons has purchased the Electric Garage at Castana, Ia., from H. T. Roeburg.

G. L. McFayden, of Norfolk, Neb., has purchased the automobile business of C. B. Gaunt at York, Neb.

H. H. and W. O. Coakley, of Omaha, Neb., has purchased the Tourist Garage at Louisville, Neb.

L. W. Hazlett, Galesburg, Ill., has been named distributor for the Stutz car in Galesburg and the Knox county territory.

Among new Nash dealers are the following: Kincaid Motor Sales, Perth, Ont.; Riggs Motor Sales, Belleville, Ont.; Carling Motor Sales, Ottawa; S. O. Tickner, Cochrane, Ont.; J. D. Patterson, 360 Dundas street, Galt, Ont.; J. W. Tomer, London, Ont.

The READERS' CLEARING HOUSE

Questions & Answers on Dealers' Problems

To Build or Not to Build —A Test Bench

Q—We wish to build an electrical test bench for generators and ignition coils. We have an Auto-Lite starting motor that we are going to use to drive the generators with, using a direct drive. We would like a diagram of your idea of wiring such a project. We wish to use a cutout relay, ammeter, also voltmeter on the charging circuit and would like to use the same instruments to test field coils on the generators. What would be the best thing to use to control the speed of the motor? Would a carbon pile or a resistance coil be cheapest to build? Give directions for building both of these. —Iowa Subscriber.

When the time required to build a test bench is taken into consideration it is found that it is generally more satisfactory to buy one of standard make.

Two or three years ago a bench was built by a concern using a standard type starting motor, battery and rheostat for driving the generator. Such a device worked all right as far as testing a generator to see whether it cuts in or not, but it cannot be used for a heat run or for any purposes where the driving motor must be run for a long period of time.

For continuous usage the battery would probably run down in 15 or 20 minutes. It was also found that the cost of even the parts needed for such a bench brought the cost of the whole bench up to the point where it paid to buy some other type where a 110 volt motor could be used for continuous testing.

For wiring the ammeter and voltmeter so as to get maximum convenience you can refer to page 23 of the May 24th, 1922 issue of MOTOR AGE. Then if you wish to buy the motor and generator stand and rheostat illustrated you can probably get them from some of the concerns building test bench equipment. However, if you decide that short runs will be sufficient for your purpose you can operate the Auto-Lite starting motor from a 6 volt storage battery a starting switch and a rheostat. You will need a carbon plate rheostat having five plates, about 3 inches square.

The ordinary carbon pile rheostat used for high rate discharge test on batteries has too much resistance. We have however, no plans for building such a rheostat but you can probably get one made without a great deal of trouble. Names of concerns selling the test benches and test bench parts will be given by separate letter, or you can refer to MOTOR AGE advertising for this information.

The Readers' Clearing House

THIS department is conducted to assist dealers and maintenance station executives in the solution of their problems.

All questions are answered direct by letter, so the name and address should be given in full. This saves waiting for the answer to be published, which sometimes occurs several weeks late, depending upon the space available.

Readers' names will not be published with articles, if a request to this effect is received with the letter.

Inquiries not of general interest will be answered by personal letter only. Emergency questions will be replied to by letter or telegram.

Also state whether a permanent file of MOTOR AGE is kept, for many times inquiries of an identical nature have been made and these are answered by reference to previous issues.

Addresses of business firms will not be published in this department but will be supplied by letter.

Technical questions answered by B. M. Ikert, P. L. Dumas and A. H. Packer; Legal, by Wellington Gustin; Paint, by G. King Franklin; Architectural, by Tom Wilder; Tires, by a Practical Tire Man; General Business questions, by MOTOR AGE organization in conference.

A FEW POINTS ON A BIG SUBJECT— NICKEL PLATING

Q—Tell us how to do nickelplating, as we are far from any one that does this sort of work and it would pay us to do it ourselves.—Williams Brothers, Clovis, New Mexico.

We doubt even if space would permit that we would be able to give sufficient information to enable you to become expert nickelplaters. There are doubtless a number of tricks in this trade, just as there are in other trades, and it would pay you to have a man work for a while at some nickelplating shop to get practical experience.

The subject is so extensive that it would also be advisable to get a good book on the subject and study it thoroughly. It would also be well to get in touch with a number of concerns making electroplating equipment, as they can no doubt give a number of helpful suggestions.

In the plating of nickel the preliminary preparation of the work is most essential,

as the surface must be absolutely clean. It is also very desirable that the work be given a very high polish preliminary to the plating process. While it is possible to plate nickel directly on iron, steel, zinc, tin and other metals which are more electro-positive than nickel, still better results can be obtained by first giving such articles a light coating of copper or brass. Dust on the surface of an article to be nickelplated will prevent a perfect finish and will show small pin holes. Even the touch of a finger renders the work unclean for nickelplating and will affect the resultant finish.

The equipment needed includes a tank and plating generator capable of delivering a fairly heavy current at low voltage. Perhaps a storage battery or small automobile type generator could be used experimentally to plate a few articles, but it is doubtful if they could be used commercially and in such a way that you would make any money by doing this work. In addition to the low voltage high current generator you would need other equipment, such as a buffing lathe, rheostat, glue pot and brush, set of wheels and buffs, nickel anodes, nickel salts and a quantity of polishing and grinding materials.

Names of books on the subject and names of concerns selling supplies will be given by letter.

A FEW MORE KNOCKS

Q—Here are a few additional motor knocks I have encountered.

1—A loose valve guide working up and down between keeper and valve.

2—Installing a new set of piston rings in an old car, the result is sometimes a thinner gasket between cylinders and the upper portion of crankcase. The result is that the new top rings will sometimes hit a shoulder in the old cylinders. It means that the cylinders should be reground but it's hard to make the customers see that this work is really needed.

3—An oil pump knock due to the ball seating itself in the outlet of the pump, when the pump is of the plunger type.

4—Bearing knock caused by lint plugging up the strainer of the oil pressure pump. The strainer should have a spring inside to prevent the wire gauze from collapsing. Idling you get pressure, but speeding up you do not.—Dan Dunne, care of John Dunne Auto Co., Hartford, Conn.

The No. 2 knock above listed is one that we did not have and we are glad to add it to our list. The others however, are quite similar to some that we have, except that the wording is a little different. MOTOR AGE appreciates the cooperation shown by subscribers in taking time to send in information which will be helpful to others.

No Room for the Used Car Display

Q—Kindly send us your pamphlet entitled, "Building Suggestions for Automobile Dealers."

We are contemplating the erection of a motor garage with 100 ft. frontage, 110 ft. deep, to a 20 ft. alley. We wish to receive any suggestions that you might give us in regard to the plan that will give us a front display space for six cars and tractor. We will also have an accessory department large enough for a stock of \$3,000 or better, also a parts room large enough for carrying at least a stock of \$5,000. Driveway to be at one side of the building, running the entire length of the building, with an exit at the rear. Stockroom to be next to driveway and so arranged to be readily accessible to the office. Considerable space for cars in back of office and stockroom with a shop at the rear.

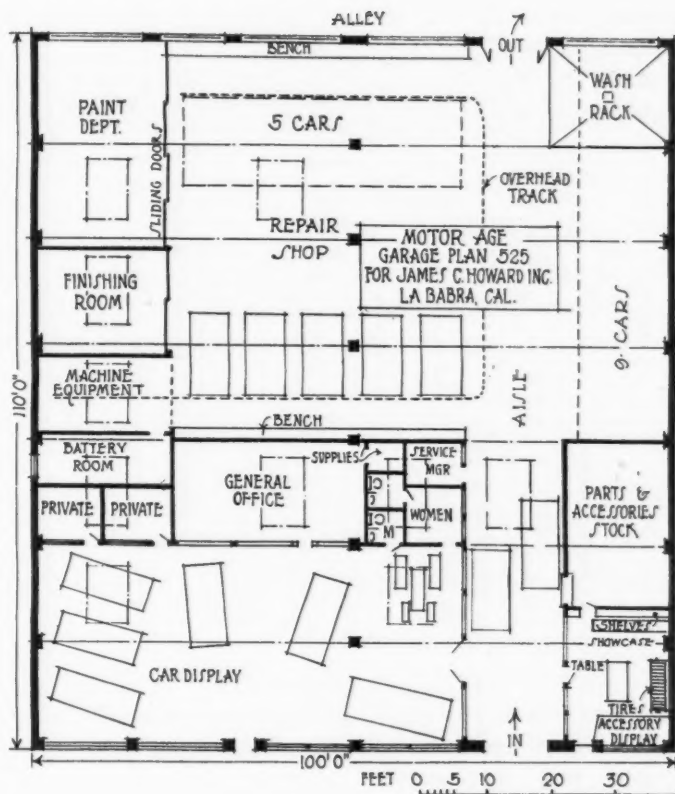
We will have sales department for new cars, used cars, tractors and implements, also a paint shop and general repair department and service department. No storage except for our own cars and those in course of repairs. Will probably have a shop force of 10 men.

Any information you may give us on the subject will be greatly appreciated by us.—James C Howard, Inc., LaHabra, Cal.

We have prepared a layout for you, including all the features that you wish, as far as it was possible to do so. The only thing that we have been obliged to omit is the used car display room. The used car display is such an unusual occurrence that we have thought best to disregard it, inasmuch as the other departments seem to fill the space so completely.

There is another thing that we have done different from your suggestion, and that it is in the placing of the aisle. You asked that it be placed at the extreme side of the building, but in order to make the aisle more usable, and in order to make it serve the different departments better, we have left the space against the side wall for a row of cars and also for the parts and accessory departments. This car space at the side may very well constitute your used car department, but it also is necessary to have space of this sort where service cars may be kept handy.

If it is thought that the repair shop is larger than necessary,



the partition could be extended through the middle of it along the line of posts and the space on outside of the wall used for more storage.

GENERATORS THAT HAVE TO BE PRIMED

Q—We are having trouble with two Auto-Lite generators. One is a type G. B. on an Overland model 75B, and the other is a model G.G. on an Overland model 85, 6-cylinder car. Neither of these generators will cut in by themselves but if the cutout is closed by hand, both will charge. The model G.B. will charge 4 amperes and the model G.G. will charge 7 amperes when the cutout is closed by hand.

One of these generators was recently sent to a service station in Milwaukee and when it was sent back it worked all right for about 25 miles and then refused to generate unless the cutout contacts were closed by hand. The armature appears to test out all right. A test on the model G.B. shows only 1.5 volts, when the cutout contacts are not held together.

1—A common cause of this trouble is in excessive lubrication of the bearings, which allows oil to work onto the commutator and be absorbed by the brushes. However, in such cases the machine will usually cut in and generate after the car has run a few miles so that the heat generated by the rotation of the commutator can dry out the oil on the brush surface.

Another possibility is that in one or more of the brushes the shunt connection or pigtail is loose in the brush or that the terminal is loose on the other end of the pigtail. A loose connection in between the shunt field coils or in the coils themselves will also cause trouble in building up. Poorly soldered connections, where the wires are attached to the commutator bars in the armature, will also cause this same trouble.

Architectural Service

IN giving architectural advice, **MOTOR AGE** aims to assist its readers in their problems of planning, building and equipping, maintenance stations, garages, dealers' establishments, shops, filling stations, and, in fact, any building necessary to automotive activity.

When making request for assistance, please see that we have all the data necessary to an intelligent handling of the job. Among other things, we need such information as follows:

Rough pencil sketch showing size and shape of plot and its relation to streets and alleys.

What departments are to be operated and how large it is expected to be.

Number of cars on the sales floor.

Number of cars it is expected to garage.

Number of men employed in repair shop.

How much of an accessory department is anticipated.

The model G. B. machine is a compound machine and the other is a third brush machine but the same set of possibilities holds in either case.

You say that the armature appears to test out all right perhaps you have not really tested it thoroughly. For short circuits a growler is probably the best test you can make, while for possible grounds a 110 volt test line makes a good test. The model G. B. generator has a shunt field which draws 1 ampere when connected to a 6 volt battery, while the model G. G. is supposed to draw 1.1 amperes.

When testing as a motor the model G. B. should draw from 1.7 to 1.9 amperes and rotate at about 450 r.p.m. The model G.G. generator when running as a motor draws about 2.8 amperes and revolves at approximately 350 r.p.m.

Fitting Essex Bearings

2—We are having an argument here in regard to fitting Essex crankshaft bearings. Some of the mechanics say they should be fit tightly, as on any splash system, while others say that a clearance of .002 inches should be allowed, as on a full pressure system, on account of the high speed at which the Essex engine runs. What is your opinion?—George Brown, Campbellsport, Wis.

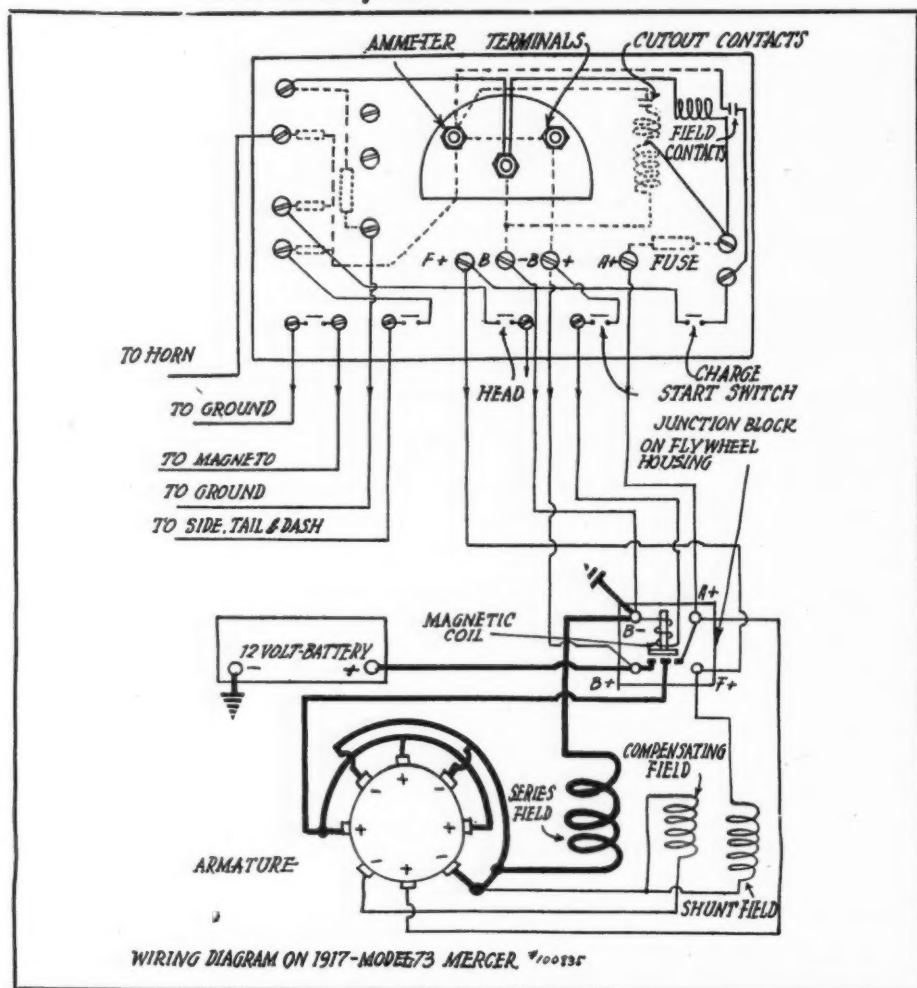
2—A clearance of .002 inches is only required when oil is fed by pressure through the crankshaft to the bearings. In the Essex engine this is not the case and in spite of the fact that it may rotate a little faster than the engine on some other cars it should have a close fit on the main and connecting rod bearings.

This does not mean of course that the bearings should be taken up so tightly that the engine needs the services of a tractor to start. The bearing is fitted correctly at the crank pin when light taps with a hammer will serve to slide the bearing back and forth on the crank pin.

ENGINEERING FOR THE SERVICE MAN—No. 5

You will find it on page 24 this week. It explains some of the principles of gear ratio.

U. S. L. System on 1917 Mercer



Q—Mail me at once wiring diagram of 22-73 Mercer using U. S. L. 12-volt electric system, flywheel starter. Any information you can give me regarding this system will be greatly appreciated.—Dan E. Enright, Tama, Iowa.

Wiring diagram requested is shown. An understanding of the operation of the USL system of the 22-73 Mercer can best be obtained by careful study of the diagram shown herewith. The starting circuit is fairly simple, being from positive battery to the "B" plus terminal on the junction block on top of the flywheel housing. From the "B" plus terminal just mentioned a small wire goes up to the "B" plus terminal on the cowl board.

Here it must be remembered that the cowl board is shown from the rear, whereas the one mentioned in the above letter referred to a front view. For this reason the starting switch is the second from the right as seen at the back of the cowl board.

Closing of the switch will now make a connection from the "B" plus terminal on the cowl board down to the magneto coil shown at the junction block on the flywheel housing. This magnetic coil operates the starting switch and the starting button on the dash merely gives current through this coil. We will now assume that the driver of the car has pressed the starting button which by magnetic action operates the starting switch.

Referring to the armature of the machine it will be seen that three positive

brushes are all connected together and are all connected up to this junction block. The three main negative brushes are also connected together and their circuit is completed through the series windings to the "B" minus terminal which is grounded. The fourth positive brush is connected to "A" plus on the junction block and the operation of the starting switch connects this fourth positive brush to the other three, at the same time connecting all of them to positive battery. The heavy starting current now flows from positive battery to all four positive brushes and through the armature to the three negative brushes and through the series field ground.

A special feature is used in the operation of the generator, by means of which the battery is connected to the shunt field at very low speeds, so as to make the generator charge the battery at lower speeds than would otherwise be possible. This is accomplished as follows:

When the engine starts a certain voltage will be produced in the armature due to the residual magnetism in the field poles. This will generate a slight voltage and we will now trace from the bottom positive brush around to the "A" plus terminal on the junction block and then up to the "A" plus terminal on the cowl board. Above the "A" plus terminal on the cowl board and to the right of it is a fuse which connects to another terminal. We will now trace from this terminal at the right of "A" plus up to

a small coil and around to another terminal which is shown in the center of "B" minus and ground.

At the right of this coil, through which a slight current will now be flowing, there are shown a pair of field contacts which will be closed by the magnetic action of this coil. With these field contacts closed you can trace from plus battery through the heavy cable to "B" plus and up to "B" plus on the cowl board, then straight up to the right hand ammeter terminal and through the meter to the left terminal and up and around and through the field contacts and the charge switch at the right over to the "F" plus terminal on back of the cowl board.

Connection is then made down to the "F" plus terminal on the junction block and to the shunt field. As the other end of the shunt field is connected through series winding to ground we have thus traced a circuit for battery current.

Note that it is necessary for the field contacts to close due to magnetic action and for the charge switch to be closed by hand, in order to have the generator build up, and the failure of either one would prevent the generator showing charge.

After the shunt field has been energized the generator will quickly build up a voltage sufficient to operate the cutout, the circuit from "A" plus through this other winding producing the magnetic action for this purpose. When the voltage from "A" plus to ground becomes 14 or 15 these cutout contacts should close, making a connection to battery. The charging circuit will then be as follows:

From positive brush at the bottom of the generator, as shown in the diagram, up to "A" plus on the junction block then up to "A" plus at the back of the cowl board and through the fuse to the terminal at the right. Then diagonally up to the left and through the heavy winding and the contact points to the left terminal of the ammeter. Then over to the right terminal of the ammeter to "B" plus and down to the "B" plus terminal on the junction block and over to the positive battery.

The three field windings shown in the diagram are used as follows: The series winding is used chiefly in starting to give enough torque, while it also has some regulating effect and tends to limit the current at high speeds. The shunt winding is used when generating to make the armature produce voltage. This shunt field will also assist when operating as a starter. The compensating field has a peculiar function, being connected from one negative brush to another and tends to prevent excessive charge current.

In checking the generating action it would be well to use a voltmeter and see if any voltage is obtained from "A" plus terminal to ground. If a volt or two is obtained it would then be well to see if there is a circuit through the coil, which is supposed to close the field contact, and this can be checked by disconnect-

(Continued on next page)

Adjustments of Special Stromberg-Ford Carburetor

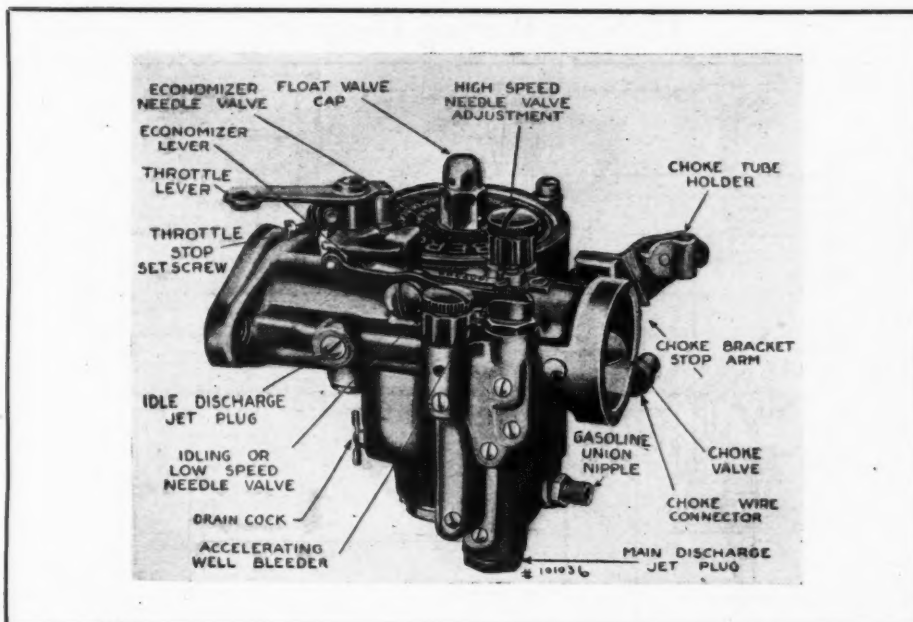
Q—Give instructions for adjusting a model O. F. Stromberg carburetor used as special equipment on Ford cars.

1—If the adjustments have not been touched since the carburetor was received from the factory they are approximately correct for starting the engine. However, if adjustments have been disturbed they may be reset as follows: screw the idling jet adjustment inward or clockwise until it seats, then unscrew it one turn. Also screw the high speed adjustment down or clockwise until it seats and then unscrew it $2\frac{1}{2}$ turns. These adjustments will be sufficiently correct to start the engine and warm it up.

After the engine is thoroughly warm move the steering post control down all the way so that the choke valve is wide open and adjust as follows: throttle the engine down so that it runs slowly and, if engine does not hit evenly, screw the low speed adjustment in for a richer mixture or out for a leaner mixture until the adjustment is obtained where the engine runs best. This adjustment controls air which enters the carburetor through a small hole seen in the illustration below the adjusting screw.

For high speed adjustment open the throttle lever on quadrant about one inch and advance the spark to the regular running position. Then screw the high speed adjustment inward or clockwise till engine slows down from too lean a mixture. Turning this adjustment down is cutting down the flow of gasoline which comes from the float chamber. After engine starts to slow down, unscrew this adjustment, turning it counterclockwise until engine runs smoothly and at maximum speed for this setting of the throttle, then turn this high speed needle valve back one or two notches so as to cut down the engine speed a little. With this setting the economizer device will change the mixture to give full power at wide open throttle.

Proper attention to the carburetor



should include occasional opening of the drain cocks shown in the illustration as this allows water in the float chamber to be drained out. There is also a gasoline strainer which should be cleaned occasionally, and this is removed by unscrewing the hex nut shown in the illustration between the drain cock and the main discharge jet plug. This strainer plug is directly under the float chamber.

2—How far apart should the points of a model L. A. Atwater-Kent ignition system as used on a Ford car be set?

2—.005 inches.

3—What would a generator do if the third brush should not seat well on the commutator or should not touch the commutator at all?

3—The generator receives its field current from one of the main brushes and the third brush. Accordingly if the third brush is making poor contact with the commutator the generator may receive no field current and will accordingly not build up and will not generate or charge the battery.

4—On a Stewart motor driven horn the mica was rather high so we took the horn apart and cut down the mica and sanded the commutator. After the horn was put together again we adjusted it,

trying to get the same tone that it formerly had but now it sticks in one place so that it is necessary to shake the horn to get it to blow. Also the tone is not as good as it formerly was.—Wisconsin Subscriber.

4—On this horn there is an end play adjustment for the armature at the rear of the horn and it is possible that this is a little too tight so that there is a frictional load on the armature. Another possibility is that there is a slight crack in the diaphragm which is almost imperceptible but which necessitates an unusually tight adjustment to get the tone that you want. The tight adjustment of course would make it hard for the armature to turn and it might not start by itself. The notched wheel which operates against a projection on the diaphragm is of course made of very hard metal but if the points of the notches become rounded to any great extent it will make the armature much harder to turn for the same tone.

Another possibility is that the bearings are worn so that when current is applied the armature pulls to one side and tends to rub or drag slightly on one of the pole pieces.

(Continued from preceding page)

ing one end of the coil and putting a low reading ammeter or voltmeter in series with it. If a voltmeter is used it will check the circuits by showing the reading with the coils cannot be expected to close the contact while the meter is in circuit.

It would also be well to use a voltmeter from "A" plus to ground and with the engine running slowly or at medium speed, close and open the field contacts by hand to see if the voltage increases greatly with the contacts closed. If the voltage comes up to 15 or more with the field contacts closed but the cutout contacts do not close, it is possible that the shunt winding of the cutout coil is open and this can be tested by connecting a voltmeter in series with it. If the field contacts close and battery current goes to the shunt field winding and the generator will still operate erratically and

show a fluctuating reading on the voltmeter, which is connected from "A" plus to ground, it would indicate internal trouble in the generator.

Should you have MOTOR AGE back to 1922 we would refer you to the Clearing House section of the May 18 issue of that year which describes method of removing transmission and clutch and getting at the armature and field windings.

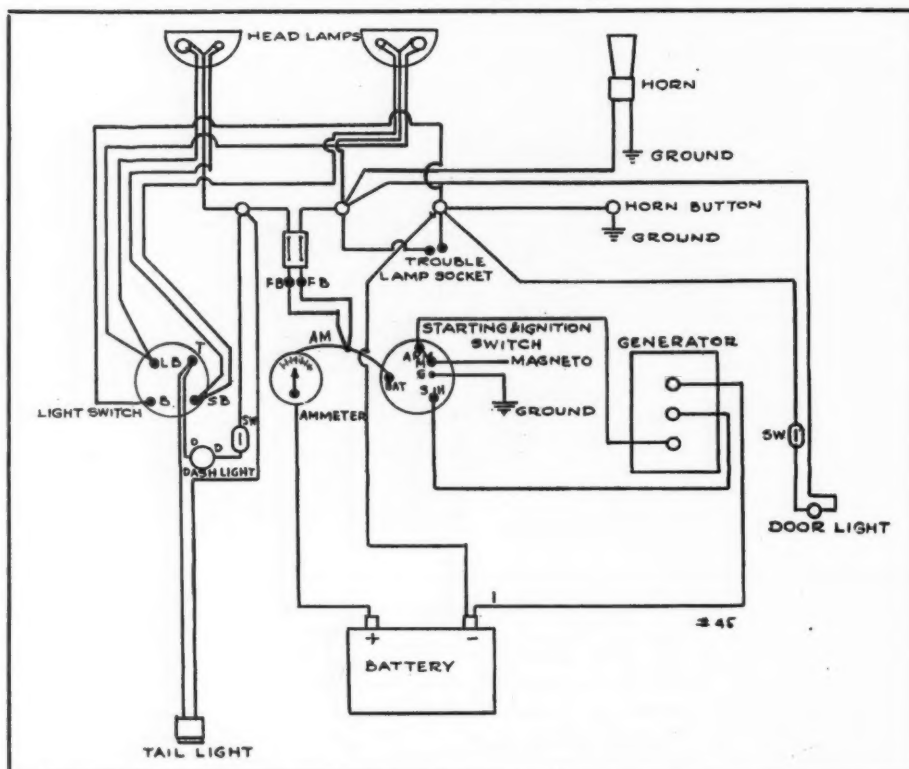
In this connection it might be well to point out that the bearing at the rear of the flywheel be kept tight as if this becomes loose, excess oil from the oil pressure system will find its way to the armature and field coils and this oil is likely to cause short circuits and grounds due to the fine metal particles which it may carry.

Should it be necessary to go this far it will be advisable to test the armature for grounds, shorts and opens and also test the brush holders for grounds and

shorts, between the various sections of the brush holding mechanism, also inspect and test carefully to see if the compensating field coils are burnt, shorted, grounded or open. Similar tests should be made on the shunt field coil and on the series field coils. From this point on you will have to work on the basis of wiring diagram and check every detail to see if it conforms to this diagram.

The compensating coil will be found at the upper right side of the field coil assembly as viewed from the rear of the car. In regard to the way in which the various fuses are used, we believe it will be made evident from the diagram. The various circuits such as horn, ground, magnteo, side, tail and dash going off to the left in the diagram really go through a junction block but these circuits do not affect the problem on which we are working.

Holmes Wiring Diagram



Q—Advise me through the Clearing House the valve timing on a Holmes air-cooled car, also if they are still manufactured. William G. Krusen, Merchantville, N. J.

The timing of the valves in the Holmes engine is as follows: Inlet opens 15 degs. past upper dead center, inlet valve closes 33 degs. after lower dead center. Exhaust opens 50 degs. before bottom dead center, exhaust closes 15 degs. after

top dead center. In order to make the timing easy we also have the following equivalents to be added to this data: 15 degs. equals 2-21/64 measured on the rim of the flywheel, 50 degs. equals 7/8 in. measured on the rim of the flywheel and 33 degs. equals 5-7/64 in.

2—Give wiring diagram of this car.

2—Wiring diagram requested is shown.

ROCKER ARMS OR CAMSHAFTS MAY CAUSE THIS KNOCK

Q—After trying everything we could think of and everything that other mechanics have suggested we are writing to you for help. A very good customer of ours has an old model Essex that has a knock which sounds like valves tapping very loud. We overhauled the engine, putting in new tappets, tappet screws, guides, valves, pushrods, piston ring, piston pins, timing gears, rocker arms and bearings.

We adjusted all bearings and still have the same noise. Then we put in another camshaft from another engine without improving the operation. The pistons fit with a clearance of .005. The noise seems to travel along the camshaft and it does not occur at all times. It will sometimes cutout and the engine will run quietly for a few minutes and then the noise returns again.—J. J. Meadows, Portsmouth, Va.

You have certainly done practically everything that a good, careful mechanic would do. There are, however, one or two things that we wish to suggest. One is that there may be side play in one of the rocker arms, which permits a slap which makes a sound like valves or camshaft. You can try the rocker arms on their bearings, moving them by hand to see if there is any appreciable play, and if so, washers should be made up to take the play out.

Even if new rocker arms and rocker

arm bolts have been installed, it is possible that you may have excessive play, as there may be some variation in the length of bolts. Another possibility would be that the surface of one or more cams and the contact surface of the

pushrods might be scored, as indicated in the illustration, but this is not likely in view of the fact that you have put in new pushrods and have tried a different camshaft.

There is the possibility, however, of having end play in the camshaft, which can easily produce a knock. This end play is removed by having the button at the front end of the camshaft make contact with the front cover of the crankcase. If this button does not make contact it should be removed and shims put behind it to bring it out so that the front end of the crankcase will serve as a thrust bearing for the camshaft.

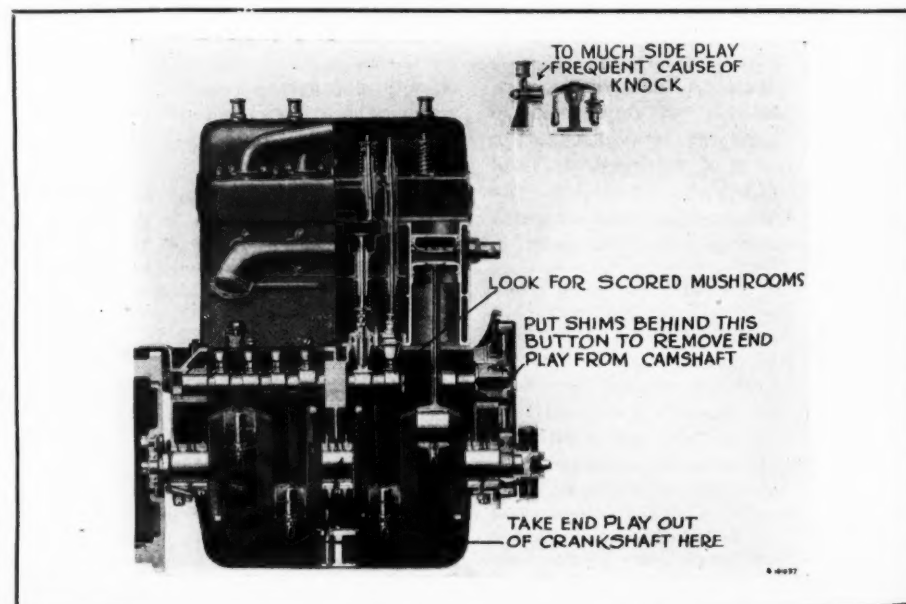
Another possibility is that there is end play in the crankshaft and this is taken care of by the center main bearing. If there is play at this point it can be taken out by installing a new center main bearing cap or by using shims soldered to the babbitt at the end of the bearing cap and also to the upper half of the center main bearing if it seems desirable to do so. You might also look at some of the causes of engine knocks as listed on page 42 of the August 9th issue of MOTOR AGE.

TRANSFORMER FOR TESTING FORD COILS

Q—Would like to know if I could use a small transformer to make a Ford ignition coil tester? Could we not use a transformer which would change 110 volts A. C. down to 10 or 20 volts and by using a small A. C. ammeter tell how much current the coil was using?

1—It is perfectly possible to use such a device, for the Ford coil, when operating on the car, uses alternating current, which ranges all the way from 3 to 4 volts up to 26 or 30 volts. However, you can probably obtain from your jobber a device of this kind already made, into which a Ford coil readily fits and it will probably be cheaper to buy one than spend the time designing one. However, coil testers on the market as far as we know are not provided with an A. C.

(Continued on next page)



Reground Engine Pumps Oil into the Cylinders

Q—We have in our shop Service truck, model 240, which is pumping oil very badly on No. 3 and No. 4 cylinders. The block has just been recently reground, new pistons and rings and connecting rods have been used and the rods aligned. Everything seems to be in first-class condition, but it still pumps a great amount of oil. We tried a new set of rings, but this did not help any. We then reground the cylinders again, and fitted new pistons, giving them only $2\frac{1}{2}$ thousandths clearance, and had new shims put in connecting rod bearings. Connecting rod bearings seem to fit perfectly on the sides, and the engine still pumps oil on No. 3 and No. 4. No. 1 and No. 2 are dry as can be.

This truck pulls well, has good compression and the valves seem to be in good condition and everything else about it seems to be good, but we are unable to stop the oil pumping. The oil pressure is about 20 pounds.—Indiana Reader.

Valves failing to seat perfectly may cause trouble of this nature. You say that the valves seat properly, but it might be well to check them with Prussian blue or by making a series of lead pencil marks all around the surface. It sometimes happens that sufficient valve grinding compound is used so as to smooth up both the valve seats and the surface on the valves themselves, so that the contact is apparently perfect. However, this may not be the case and you can check it by means of the Prussian blue or lead pencil marks as suggested.

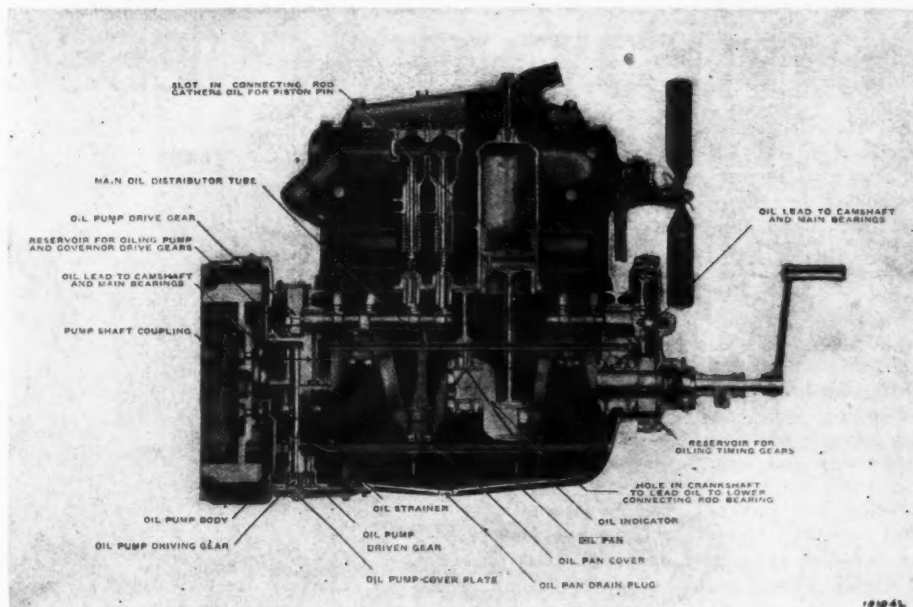
A certain amount of offset exists on the connecting rods in the Service truck engine and if the rod is not properly installed and is then forced to take a seat on the crankshaft pin the crankshaft will fit rather poorly and possibly allow a great deal of oil to pass. The connecting rods should be checked up on an aligning gauge and then when installed in the engine should not require any side pressure on the rod to make the lower end of the rod fit on the crank pin.

Where oil scoops are used on the connecting rod cap they should, of course, be mounted in such a way as to force oil up into the connecting rod bearings when the engine rotates.

A good fit on the connecting rod bearings is also essential. The best method of doing this is to make up a mandrel, which is from .002 to .003 oversize, as compared to the diameter of the crank pin. The connecting rod bearing may then be tightly fitted to this mandrel and when installed on the crankshaft will have the proper amount of clearance to allow for the oil film.

On Service truck engines it is also considered advisable to fit the piston rings with a very slight clearance at the end, the recommended amount being .003.

An illustration of the engine in question is given and it will be seen that from the gear oil pump, at the rear of the engine, oil flows up to a horizontal pipe known as the main oil distributor tube which carries oil to the main bearing. From the main bearing oil flows to the crankshaft to the connecting rod



bearing. A leak in this pipe, which would allow oil to shoot out into the space occupied by No. 3 and No. 4 connecting rod, would scatter a lot of oil up into these cylinders. It can also be seen that excessive oil level, as might be caused by improper location of the oil pan, would make the connecting rods dip too far into the oil and scatter an unnecessary amount.

(Continued from preceding page)

ammeter for determining how much current the coil is taking.

2—Would like to have you explain why it is necessary to set a generator on a neutral point before it will generate satisfactorily.

2—Armatures are wound so that current from one brush flowing through all the turns of winding to the other brush will go under the pole pieces. This is true when a machine is operating as a motor. Current flowing through the windings, and not affected by any magnetism, has no effect as a motor.

In similar manner, in a generator, voltage is generated through certain turns of wire in the armature and adds up at certain points on the commutator, which are known as the neutral points. At the neutral points there is no voltage generated between commutator bars, but from one neutral point to the other there is the maximum voltage obtainable. If the brush rests on the commutator and is not on a neutral point it is resting on two commutator bars across which there is a certain voltage, which means that the brush is short circuiting a portion of the armature which is alive and trying to generate a voltage.

Having the brushes off neutral in a generator therefore, has two effects. It short circuits a portion of the armature and at the same time makes a connection to portions of the armature across which the voltage is not maximum. Some operation can be obtained if the brushes are not exactly on neutral, but there will be a reduction in output and considerable sparking at the brushes, which destroys

In cases of oil pumping when all other experiments have failed it is often found helpful to bleed the pistons so that oil which gets onto the cylinder walls can be scraped off and flow through holes in the piston back into the crankcase. A method used by a large motor car concern and found to be quite satisfactory was described on page 44 of the August 16th, 1923, issue of Motor AGE.

the brushes and in time will destroy the commutator.

3—In using a growler should not the armature be hot or warmed up before the test is made?—Hugh Gordon, Healdton, Okla.

3—No. It is not necessary to heat the armature first. If the armature is shorted, however, there will be current flowing in it due to the growler action, and this will in a short time make the armature warm up.

REPLACING FORD BANDS WITHOUT TAKING BENDIX FROM STARTER SHAFT

Q—In your August 2 issue on page 27 we notice an inquiry from J. J. Galles, of Billings, Montana, in regard to the possibility of removing a Ford transmission cover without first removing the Bendix and cover of the starting motor. We have found this to be possible, proceeding as follows.

First, remove the four screws that hold the starting motor to the transmission cover and then disconnect the starter cable. Take out all cap screws and bolts holding the transmission cover to the crankcase. Disconnect hot air stove, exhaust pipe and magneto wire. Then as the transmission cover is lifted, it will be found that when two inches up the starter can be worked out so that the shaft and Bendix will clear the flywheel.

The starting motor may be rested against the dash while work is being done on the bands and when the cover is being replaced the Bendix must enter the opening in the transmission cover, as the cover is lowered. We use this method continually and have found that it materially reduces the time required for relining the transmission bands.—Carl H. Sheppard, Newark, O.

1—MOTOR AGE wishes to express appreciation for the short cut above described.

BOOSTING ACCESSORY SALES

SELLING "arguments" are not necessary to move good accessories—accessories that have a legitimate place on the car. Good display will do the work, for, motorists have come to believe that unless their car is completely equipped, they are not enjoying the full measure of usefulness from that car and they are right.

If you have a display case, keep it clean and neat, then it can't help but be attractive. Keep your window the same way and well lighted and you will find that you will get "lookers" who will develop into buyers. We have in mind, one accessory dealer who always keeps his window splendidly dressed. It is on a street where many people pass but few stop because there is nothing to stop for—until they get to his place.

The monotony of clothing, grocery and candy stores is suddenly relieved by the fresh, clean appearance of his window and the other night, we stopped and counted twenty-five people who passed and only one failed to stop and look in. Does that mean anything to you?

The body of the latest model of the Hershey theftproof lock can be designed to meet individual desires, or it can be made standard. The bracket is adjustable in the manufacture—can be made to fit the angle of any dash or steering column—and can be shaped as desired.

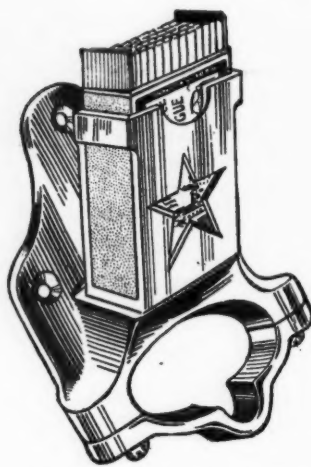
As in previous models of the Hershey theftproof lock, this lock is operated by the movement of a lever (without the use of a key), which shuts off the ignition and automatically locks the steering column.

It is conveniently located and easy to reach and use. It prevents any liability of driving off with the steering column locked, as the motor cannot be started without throwing the lever through the unlocked position to close ignition circuit.—Hershey Mfg. Co., Wrigley Bldg., Chicago.

The Thorn Machine Tool Corp., 107 N. Franklin street, Syracuse, N. Y., are the makers of the Thorn Automatic Windshield Wiper which is operated from the vacuum tank.

The Yale Reverse Gas Tank is made by the Yale Corp., 1517 N. Wilton Place, Los Angeles, Calif. It is a small tank, seven inches long and just large enough around to fit into the gas tank of any car in place of the cap. It holds enough gasoline to take care of an emergency and will run a car from two to four miles. The price is \$1 and it is made in two sizes for Ford cars for the square and round tank, also in another size for all other makes of cars.

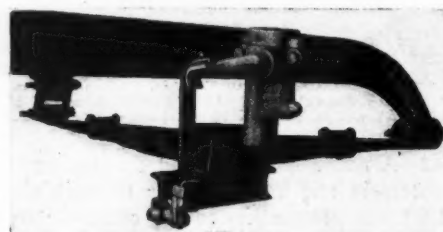
The Buffalo Automotive Equipment Co., 61 Carroll street, Buffalo, N. Y. has placed on the market the Eagle Head



Sterling steering post brace



Eagle Head wing radiator cap

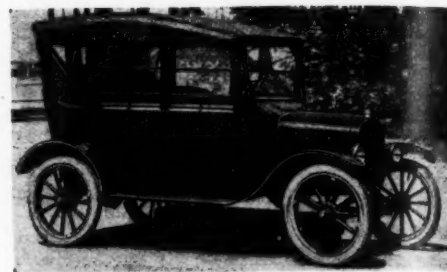


Lovejoy Jr. shock absorber

Wing Radiator Cap, shown in the cut on this page. It is made of cast bronze, heavily nickel plated and is bored to accommodate a Boyce Motometer and fastens to the radiator with set screw locks. The small size sells for \$3.50 and the large size for \$4.

The Ustus Limousette for Ford cars is made by the Daffoe Eustice Co., 4042 W. Jefferson avenue, Detroit. The cut shows the touring model equipped with a Ustus. The Ustus does not make the car one permanently enclosed for, in a few minutes, the driver can slide the sides back out of sight and the advantages of an open car are available. The touring model sells at \$36 and the roadster model at \$28.

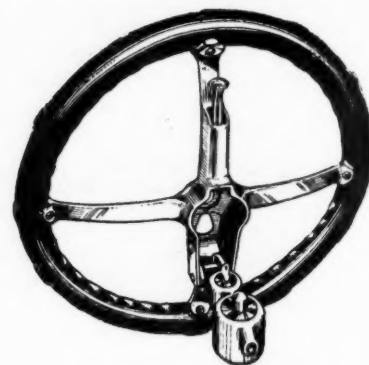
The Sterling Auto Devices Co., 207 S. Green street, Chicago, announces another Sterling product in their Ford steering post brace, made of pure cast aluminum and highly polished. The cut shows the brace with a match box holder attached, this style sells at \$1.75 while the plain



Ustus Limousette



Thorn automatic windshield wiper



Spencer lock tilting wheel

brace (without the match box holder) sells at \$1.25.

The Lovejoy Manufacturing Co. has added the Lovejoy Junior shock absorber to its line. The smaller model is in all respects a duplicate of the larger one and is intended for such cars as Dodge, Essex, Studebaker, Buick, and other light cars. The Junior sells for \$65 plus \$10 for installation. It will be distributed through regular Lovejoy distributors and dealers.

The Spencer Lock Tilting Wheel is the product of the Spencer Mfg. Co., Spencer, O. The spider of this wheel, designed to cover the hardened steel forging, is of strong die-cast aluminum, highly polished. The forging is baked black enameled. The 17-inch polygon rim, handsomely finished and corrugated and dished to fit the hands is furnished in black walnut or black composition. The feature of the wheel is, of course, the lock which, when put into operation, tilts the wheel as shown in the cut.

GETTING MORE OUT of the SHOP



Wallace electric solder pot



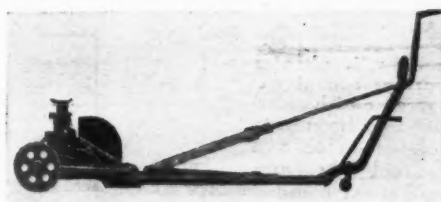
Manley wheel aligning gage



Accurate rolling machine



Marathon ventilating fan



Dickerson turntable jack

THIS is a good time of the year to clean house, inside and out and take stock of tools and equipment in the shop and to renew all of those which have worn out or broken. This should be a semi-annual duty, this thing of cleaning house and when it is done, throw out all of the old junk that somehow clutters up corners and under tables. Give the floor a thorough going over and renew the whitewash on the walls.

Open all the doors and windows and let the cool breezes get well into the corners and freshen things up. Wash the windows and keep them clean—you'll need all the light you can get during the dark days of winter when there is little sunshine.

Look carefully over the tools and see if there are any wearing parts that could stand replacement. Be sure that each man has a complete kit of everything that he will need and make a list of everything that you will need and get it.

The Manley Wheel Aligning Gage is the newest announcement coming from

the Manley Mfg. Co., York, Pa. The photographs illustrate the application and functioning of this gage.

The Marathon Electric Manufacturing Co., Wausau, Wis., has a new product—an electric motor-driven ventilating fan adapted to garage or factory use. The fan is of special design and mounted in a frame with lugs for securing to wall opening or window frame. The motor is suspended below on an adjustable base away from the dust and grease-laden air current and drives the fan through a steel-encased belt. Speed variations from 100 to 750 revolutions are obtained by belt slippage controlled by a convenient wheel handle. The fans are made in two sizes: the 20-in., with 110-volt, 60-cycle, 1-phase motor, lists at \$85; the 24-in., with same equipment, \$100. Motors for all types of current can be furnished at approximately the same price.

The C. A. Dickerson Compressor Corp. 220 Chicago street, Buffalo, N. Y. has placed on the market their Dickerson Turntable Jack for raising, moving or turning cars in crowded places and for

various garage uses. Its weight is 100 pounds and the lifting capacity is 8500 pounds. It sells at \$48.

The J. D. Wallace Co., 1401 W. Jackson Blvd., Chicago, has announced the Wallace Electric Solder Pot, designed to do away with overheating and oxidization while preparing metals for repair work. An automatic control prevents overheating and is put into effect as soon as the heat reaches 600 degs. Fahr. The cut shows the pot complete with automatic control.

The Accurate Rolling Machine for repairing bendix drives has been announced by the Accurate Tool Works, Erie, Pa. The cut shows the machine and all the parts. It is claimed for this piece of equipment that the compression sleeve on the old bendix drive can be replaced in 15 minutes. The cost of the machine is \$35.

New models of several cars have been announced and sales of all cars have taken a decided swing to the closed model. This means but one thing: That automobiles are going to be plentiful this winter and service for them will require a well equipped shop. Prepare to get in on this—cars can no longer stay in garages and shops for a week or two to have some minor repair made, simply because the proprietor of that shop has not equipped himself.

If you are going to enjoy your share of this business, you must be prepared to give quick service and to do this, it is necessary for you to keep abreast of new methods. The car owner will always figure, "If this fellow can't do it, I'll go to someone who can" and it is surprising how many shops have come into being that really can take care of many wants in a very short time, because they are equipped to do so.

Don't content yourself, however, with fitting out your shop and getting ready for the business—remember there are others who are doing the same thing and remember that unless you go and get it, you'll not be on the receiving end. Advertise the fact that you are re-equipping your shop to take care of every emergency and every repair.

Make sure that people know all about it and tell them how the new tools which you are installing, make it easier for you to do the work and consequently, cheaper for them to pay for.

An advertising campaign, built around your shop equipment, telling the customer what each tool accomplishes and how it operates, will not only help the customer to a better understanding of your business, but also show him the necessity of bringing the car to you for all of its repairs. Feature one tool or one piece of equipment at a time and run a picture of it with a few words describing it—car owners want to know more about your shop and you.

COMING MOTOR EVENTS

AUTOMOBILE SHOWS

Bethlehem, Pa.	Closed Car Show at the Coliseum	Oct. 1-6
Chicago	Chicago Closed Car Show, Coliseum	Oct. 13-20
Chicago	Annual Salon, Drake Hotel	Jan. 26-Feb. 2
Columbus, Ga.	Automobile Show	Oct. 15-20
Dallas, Texas	Annual Fall Show	Oct. 13-28
Dallas, Texas	Annual Automobile Show	Feb. 11-17
Danbury, Conn.	Automobile Show in Conjunction with	
Fresno, Calif.	State Fair	Oct. 1-6
Little Rock, Ark.	Automobile Show	Sept. 28-Oct. 5
Louisville, Ky.	Annual Automobile Show	Oct. 8-13
Louisville, Ky.	Automobile Show at the Jefferson County Armory	Feb. 18-23
Memphis	Annual Automobile Show	Sept. 28-30
New York	Annual Closed Car Show	Oct. 1-6
New York	Annual Electrical and Industrial Exposition	Oct. 17-27
New York	Foreign Automotive Association Exposition	Nov. 4-10
New York	Annual Salon, Hotel Commodore	Nov. 11-17
New York	National Automobile Show	Jan. 5-12
Peoria, Ill.	Implement and Vehicle Show	Sept. 26-Oct. 6
Pittsburgh	Annual Fall Show at the Motor Square Gardens	Sept. 22-29
Salt Lake City	Fall Show in Conjunction with State Fair	Oct. 1-6
Sioux City, Ia.	Automobile Show in Conjunction with Annual Fair	Sept. 16-22
Waco, Texas	Annual Automobile Show	Oct. 20-27
Washington, D. C.	Annual Fall Closed Car and Accessory Show	Oct. 20-Nov. 5
Washington, D. C.	Annual Fall Automobile Show	Oct. 28-31

FOREIGN SHOWS

Buenos Aires	Annual Automobile Exposition	Nov. 1-15
London	Motor Car Exposition	Nov. 2-10
Montevideo, Uruguay	Automobile Show	September
Montreal	Closed Car Show	Sept. 29-Oct. 6
Paris	Automobile Show at Grand Palais	Oct. 4-10
Paris	Truck and Tractor Show at Grand Palais	Oct. 24-Nov. 2

RACES

Berkeley, Calif.		Thanksgiving
Fresno, Calif.	Auspices of the A. A. A.	Sept. 29
Kansas City	Speedway, Auspices of the A. A. A.	Oct. 17
Los Angeles		Nov. 29
Oakland, Calif.		Nov. 1

CONVENTIONS

Boston, Mass.	Fall Convention, M. A. M. A.	Sept. 19-21
Chicago	Exhibit and Convention of Automotive Equipment Association	Nov. 12-17
Cleveland, O.	Society of Automotive Engineers Production Meeting	October
Cleveland, O.	Thirtieth Annual Convention, National Assn. of Farm Equipment Manufacturers	Oct. 24-26
Columbus, O.	Annual Convention, Ohio Trade Assn.	Dec. 5-6
Detroit	S. A. E. Annual Meeting	Jan. 22-25
New York	National Tire Dealers' Assn. Convention	Nov. 13-15

SQUEEKS & RATTLES

T. N. T.* Special

By "Kay Em" Roberts

By recipes alluring you make your own homebrew, in phrases reassuring they tell you what to do; the quantities are given, essential points are driven, the secrets old are riven and handed out to you. Three pounds of green tomatoes cut into fragments small, a dozen raw potatoes—so rich in alcohol—an onion and a carrot, some feathers from the parrot, some cobwebs from the garret—most anything at all. With yeast and sugar blended with water in a crock this mixture is intended to make ten quarts of stock. Two weeks of fermentation and you can tell the nation you've got liquid ration to stop a Chinese clock. Take just a nip at dinner and tell them all it's fine; you've brewed yourself a winner, you shout along the line. It beats old ale and porter, a drop is worth a quarter, you gulp another snorter and your nose begins to shine. Another little jigger before you go to bed; your feet are growing bigger and so, likewise, your head; and all your friends and neighbors read in the morning papers, "Jim Johnson's earthly labors are over now—he's dead!"

*T. N. T. means Tell No Tales.

Related to the Can

I overhauled the bloomin' thing
That's what I did today
I fit the piston rings so tight
I hope the job will stay.

I held my breath and tried it out.
It ran without a coil,
Before the job it worked half way
But now it sure pumps oil.

Perhaps you think I'm on the bum
And due to take a bump
An engine—no, you've got me wrong,
It was a big oil pump.

—Hap.

They Get Blamed for Everything

A Chicago theatre, playing "The Fool," advertises "Of the people and for the people," and a friend of ours says he's got 10 to 1 that some automobile dealer wrote it.

Sketches From Life



Jinx

This is Jinx who is a student of applied brakes and automobile sales engineering at the School for the Otherwise All Right. We don't know why he is interested in the size and shape of heads but we presume that he is one of the few who believe that some time, heads will enter into this thing of making and selling automobiles.

(A Howl for Help.)

AN IRISH farmer once removed from one village to another, where he was not known, so all letters to him had to be addressed to the postoffice. His name was Mike Howe. The morning after he arrived he called at the office, and the following dialogue took place:

"Any letters for Mike 'Owe?'"
"What?" asked the astonished assistant.
"Any letters for Mike 'Owe?'"

"No, we haven't any letters for your cow, or anyone else's cow, either."

LEW BRICATION.

(This list comprises trucks distributed on a national basis)

Ru—Russel
Sa—Salsbury
Sh—Sheldon
Ti—Timken
To—Torbensen
Wa—Walker
Wi—Wisconsin
Ch—Chain
DR—Double Reduction
IG—Internal Gear
SB—Spiral Bevel
SP—Straight Bevel
WO—Worm

Current Motor Truck Specifications—Continued

(This list comprises trucks distributed on a national basis)

MAKE AND MODEL	Tons Capacity	Price	ENGINE		Clutch Make	Gearset Make	REAR AXLE		TIRES		MAKE AND MODEL	Tons Capacity	Price	ENGINE		Clutch Make	Gearset Make	REAR AXLE		TIRES	
			Make & Model	Bore & Stroke			Make & Model	Final Drive	Front	Rear				Make & Model	Final Drive			Front	Rear		
Larrabee X2	1-1 1/4		Co-8R	3 3/4x4 1/2	B-L	B-L	Sh-1480	SB	34x5n	34x5n	Sandow J	2 1/2	\$2750	Co-C4	4 1/2x5 1/2	B-L	B-L	Ti-6560	WO	36x4	36x7
Larrabee J4	1 1/2-2 1/4		Co-J1	3 3/4x5	B-L	B-L	Sh-1501	WO	34x3 1/2	34x5k	Sandow M	5	4325	Co-B5	4 1/2x6	B-L	B-L	Ti-6700	WO	36x6	40x12
Larrabee K5	2 1/2-3 1/2		Co-LA	4 1/2x5 1/2	B-L	B-L	Sh-22	WO	36x4	36x8	Sanford 10	1 1/2-2 1/4		Co-8R	3 3/4x4 1/2	B&B	B-L	Sh-1501	WO	36x3 1/2	36x5 1/2
Larrabee L4	3 1/2-4 1/2		Co-LA	4 1/2x5 1/2	B-L	B-L	Sh-31	WO	36x5	36x10	Sanford 15	2 1/2-3 1/2		Co-N	3 3/4x5	B-L	B-L	Sh-21	WO	36x4 1/2	36x4 1/2
Maccar L2	1 1/2		Co-K4	4 1/2x5 1/2	B-L	B-L	Ti-6460	WO	36x4	36x6	Sanford 25	3 1/2-5		Co-C4	4 1/2x5 1/2	B&B	B-L	Sh-31	WO	36x5	40x6d
Maccar HA	2		Co-K4	4 1/2x5 1/2	B-L	B-L	Ti-6560	WO	36x4	36x4d	Sanford 50	5-7		Co-E4	4 1/2x5 1/2	B&B	B-L	Sh-51	WO	36x5	40x6d
Maccar H2	3		Co-LA	4 1/2x5 1/2	B-L	B-L	Ti-6666	WO	36x5	36x6d	Schacht 1	1 1/2		Co-E4	4 1/2x5 1/2	B&B	B-L	Sh-51	WO	36x5	36x7 1/2
Maccar M3	4		Co-LA	4 1/2x5 1/2	B-L	B-L	Ti-6666	WO	36x5	36x6d	Schacht 2	2 1/2		Co-E4	4 1/2x5 1/2	B&B	B-L	Sh-51	WO	36x5	36x7 1/2
Maccar G-6	5-6		Co-B2	4 1/2x6	B-L	B-L	Ti-6760	WO	36x6	40x6d	Schacht 3	3 1/2		Co-E4	4 1/2x5 1/2	B&B	B-L	Sh-51	WO	36x5	36x7 1/2
MacDonald O-3	5	\$5500b	Bu-WTU	3 3/4x5 1/2	B-L	B-L	**Own	IG	36x6	36x10	Schacht 4	4 1/2		Co-E4	4 1/2x5 1/2	B&B	B-L	Sh-51	WO	36x5	36x7 1/2
MacDonald A	7	8000b	Bu-YTU	4 1/2x6	B-L	B-L	**Own	IG	40x7	40x14	Schacht 5	5 1/2		Co-E4	4 1/2x5 1/2	B&B	B-L	Sh-51	WO	36x5	36x7 1/2
Mack AB	1 1/2	3000	Own	4x5	Own	Own	Own	Ch	36x4	36x3 1/2	Schwartz 20	1 1/2-2 1/4	2500	Wi-UAU	4 1/2x6	B&B	Own	Own	WO	36x4	36x5d
Mack AB	2	3150	Own	4x5	Own	Own	Own	DR	36x4	36x3 1/2	Schwartz 45	2 1/2-3 1/2	3200	Wi-UAU	4 1/2x6	B&B	Own	Own	WO	36x5	40x5d
Mack AB	2	3300	Own	4 1/2x5	Own	Own	Own	Ch	36x4	36x4d	Schwartz 65	2 1/2-3 1/2	3800	Wi-UAU	4 1/2x6	B&B	Own	Own	WO	36x5	40x5d
Mack AB	2	3750	Own	4 1/2x5	Own	Own	Own	DR	36x4	36x4d	Schwartz 90	3 1/2-4 1/2	4400	Wi-UAU	4 1/2x6	B&B	Own	Own	WO	36x5	40x5d
Mack AB	2	3400	Own	4 1/2x5	Own	Own	Own	Ch	36x4	36x4d	Schwartz 120	4 1/2-5 1/2	4600	Wi-UAU	4 1/2x6	B&B	Own	Own	WO	36x5	40x5d
Mack AB	2	3850	Own	4 1/2x5	Own	Own	Own	DR	36x4	36x4d	Schwartz 150	5 1/2-6 1/2	1980	Bu-WTU	3 3/4x5 1/2	B-L	B-L	Ti-6250	WO	34x5n	34x5n
Mack AC	3	4950	Own	5x6	Own	Own	Own	Ch	36x5	40x5d	Schwartz 180	6 1/2-7 1/2	2840	Bu-GTU	4 1/2x5 1/2	B-L	B-L	Ti-6460	WO	34x5	34x5d
Mack AC	3	5500	Own	5x6	Own	Own	Own	Ch	36x6	40x6d	Schwartz 210	7 1/2-8 1/2	3480	Bu-ETU	4 1/2x5 1/2	B-L	B-L	Ti-6560	WO	36x6	36x6d
Mack AC	3	5750	Own	5x6	Own	Own	Own	Ch	36x6	40x12	Schwartz 240	8 1/2-9 1/2	4160	Bu-YTU	4 1/2x6	B-L	B-L	Ti-6666	WO	36x6	36x6d
Mack AC	3	6000	Own	5x6	Own	Own	Own	Ch	36x7	40x7d	Schwartz 270	9 1/2-10 1/2	4890	Bu-BTU	5 x6 1/2	B-L	B-L	Ti-6760	WO	36x6	36x7d
Mack AB	5	3400	Own	4 1/2x5	Own	Own	Own	Ch	36x5	40x5d	Schwartz 300	10 1/2-11 1/2	2375	Co-J4	3 3/4x5	B-L	B-L	Ti	WO	34x3 1/2	34x5k
Mack AC	7	4950	Own	5x6	Own	Own	Own	Ch	36x6	40x6d	Schwartz 330	11 1/2-12 1/2	3250	Co-K4	4 1/2x5 1/2	B-L	B-L	Ti	WO	36x4x3	36x7k
Mack AC	10	5500	Own	5x6	Own	Own	Own	Ch	36x6	40x12	Schwartz 360	12 1/2-13 1/2	3550	Co-L4	4 1/2x5 1/2	B-L	B-L	Ti	WO	36x4x3	36x7k
Mack AC	13	5750	Own	5x6	Own	Own	Own	Ch	36x6	40x12	Schwartz 390	13 1/2-14 1/2	4175	Co-L4	4 1/2x5 1/2	B-L	B-L	Ti	WO	36x4x3	36x7k
Mack AC	15	6000	Own	5x6	Own	Own	Own	Ch	36x7	40x7d	Schwartz 420	14 1/2-15 1/2	4475	Co-B5	4 1/2x6	B-L	B-L	Ti	WO	36x4x3	36x7k
Mason	1 1/2	1200	He	4x5	Own	Own	FL	SB	34x5n	34x5n	Schwartz 450	15 1/2-16 1/2	4950	Co-B5	4 1/2x6	Del	B-L	Ti	WO	36x4x3	36x7k
Master	1 1/2		Bu-WTU	3 3/4x5 1/2	Ful	Ful	Ti-5511	SB	33x5n	33x5n	Service 12	3 1/2		Co-B5	4 1/2x6	Del	B-L	Ti	WO	36x4x3	36x7k
Master	2 1/2		Bu-OU	4 1/2x5 1/2	Ful	Ful	Ti-6460	WO	34x4	34x6	Service 25	11 1/2		Co-B5	4 1/2x6	Del	B-L	Ti	WO	36x4x3	36x7k
Master	2 1/2		Bu-ETU	4 1/2x5 1/2	Ful	Ful	Ti-6560	WO	34x4	36x8	Service 33	11 1/2		Co-B5	4 1/2x6	Del	B-L	Ti	WO	36x4x3	36x7k
Master	5 1/2		Bu-YTU	4 1/2x6	B-L	B-L	Ti-6666	WO	36x5	40x10	Service 42	2		Co-B5	4 1/2x6	Del	B-L	Ti	WO	36x4x3	36x7k
Master	6 1/2		Bu-YTU	4 1/2x6	B-L	B-L	Ti-6760	WO	36x5	40x12	Service 61	3		Co-B5	4 1/2x6	Del	B-L	Ti	WO	36x4x3	36x7k
Master	6 1/2		Bu-ATU	4 1/2x6 1/2	B-L	B-L	Ti-6760	WO	36x6	40x14	Service 81	4		Co-B5	4 1/2x6	Del	B-L	Ti	WO	36x4x3	36x7k
Maxwell	1 1/2	1995	Own	3 3/4x4 1/2	Own	Own	Ti	WO	35x5n	35x5n	Service 103	6		Co-B5	4 1/2x6	Del	B-L	Ti	WO	36x4x3	36x7k
Menominee	B	1650	Wi-SU	4x5	B&B	Det	Co-5200	SB	35x5n	35x5n	Signal NF	13 1/2		Co-B5	4 1/2x6	Del	B-L	Ti	WO	36x4x3	36x7k
Menominee HT	1 1/2	2000	Wi-FAU	3 3/4x5	Ful	Del	Wi-800G	WO	34x3 1/2	36x5k	Signal H	21 1/2		Co-B5	4 1/2x6	Del	B-L	Ti	WO	36x4x3	36x7k
Menominee H	1 1/2	2175	Wi-EAU	4x5	Ful	Del	Wi-800H	WO	36x3 1/2	36x5k	Signal J	31 1/2		Co-B5	4 1/2x6	Del	B-L	Ti	WO	36x4x3	36x7k
Menominee D	2 1/2	2875	Wi-TAU	4x6	Ful	Del	Wi-800J	WO	36x4	36x8	Signal M	5		Co-B5	4 1/2x6	Del	B-L	Ti	WO	36x4x3	36x7k
Menominee	J	4850	Wi-RAU	4 1/2x6	B&B	Det	Ti-6760	WO	36x6	40x12	Signal R	7 1/2		Co-B5	4 1/2x6	Del	B-L	Ti	WO	36x4x3	36x7k
Moline	10 1/2	1695	Own	3 1/2x5	B&B	Own	To-A	IG	34x5n	36x6n	Standard 15	11 1/2	13301	Co-N	3 3/4x5	B-L	B-L	Ti-6352	WO	34x3 1/2	34x5
Moreland R.R.	1	1595	He-O	1x5	B-L	B-L	Ti-5512	WO	34x5n	34x5n	Standard 16	11 1/2	1695	Co-N	3 3/4x5	B-L	B-L	Ti-6352	WO	34x3 1/2	34x5
Moreland BX	1 1/2	1980	He-O	1x5	B-L	B-L	Ti-6161	WO	36x3 1/2	36x6	Standard 17	11 1/2	2795	Co-K4	4 1/2x5 1/2	B-L	B-L	Ti-6666	WO	36x5	36x12
Moreland EX	2	2625	Co-K4	4 1/2x5 1/2	Own	Own	Ti-6461	WO	36x4	36x8	Standard 21	11 1/2	3645	Co-L4	4 1/2x5 1/2	B-L	B-L	Ti-6760	WO	36x6	40x14
Moreland AX	3	3500	Co-LA	4 1/2x5 1/2	Own	Own	Ti-6560	WO	36x5	36x10	Standard 31	11 1/2	4495	Co-B5	4 1/2x6	B-L	B-L	Ti-6760	WO	36x6	40x14
Moreland RX	5	4600	Co-B5	4 1/2x6	Own	Own	Ti-6666	WO	36x6	40x12	Standard 5K	5		Co-B5	4 1/2x6	B-L	B-L	Ti-6760	WO	36x6	40x14
Nash	2018	1595	Own	3 3/4x5 1/2	B&B	Det	Cl-1D	IG	34x4	34x5	Star	1 1/2	610b	Co-N	3 3/4x5	B-L	B-L	Ti-6460	WO	36x4x3	36x7k
Nash	4017F	2750	Bu-HU	4 1/2x5 1/2	B&B	Own	Own	IG	36x6	36x6	Sterling 1	1 1/2	3240	Co-N	3 3/4x5	B-L	B-L	Ti-6560	WO	36x4x3	36x7k
Nash	3018	2150	Own	3 3/4x5 1/2	B&B	Det	Cl-2D	IG	34x4	34x7	Sterling 2	1 1/2	3440	Co-N	3 3/4x5	B-L	B-L	Ti-6560	WO	36x4x3	36x7k
Nash	5018	2250	Own	3 3/4x5 1/2	B&B	Det	Cl-2D	IG	34x4	34x7	Sterling 2 1/2	1 1/2	3700	Co-N	3 3/4x5	B-L	B-L	Ti-6560	WO	36x4x3	36x7k
Noble	A-75	1395	Bu-WTU	3 3/4x5 1/2	Ful	Ful	Cl-300	SB	34x4 1/2	34x4 1/2	Sterling 3 1/2	1 1/2	4750	Co-N	3 3/4x5	B-L	B-L	Ti-6560	WO	36x4x3	36x7k
Noble	A-21	1890	Bu-WTU	3 3/4x5 1/2	Ful	Ful	Sh-1501	WO	34x5	34x5	Sterling 5	1 1/2	5400	Co-N	3 3/4x5	B-L	B-L	Ti-6560	WO	36x4x3	36x7k
Noble	B-31	3795	Bu-CTU	3 3/4x5 1/2	Ful	Ful	Sh-103														

Current Motor Truck Specifications—Continued

(This list comprises trucks distributed on a national basis)

MAKE AND MODEL	Tons Capacity	ENGINE				REAR AXLE		TIRES		MAKE AND MODEL	Tons Capacity	ENGINE				REAR AXLE		TIRES		
		Price	Make & Model	Bore & Stroke	Clutch Make	Gearset Make	Make & Model	Final Drive	Front			Rear	Price	Make & Model	Bore & Stroke	Clutch Make	Gearset Make	Make & Model	Final Drive	Front	Rear
CANADIAN																				
Walter.....N2	3600†	Ow.....	4x5 3/4	B-L.	B-L.	Ow.....	DR.	36x4	36x8	Goifredson....20	34-1	1685	Bu-WTU	3 3/4 x 5 1/2	B-L.	B-L.	Ti-6250.	WO.	34x5n	34x5n
Walter.....S5	5100†	Ow.....	4 1/2 x 6 1/2	B-L.	War.	Ow.....	DR.	36x6	40x6d	Goifredson....40	1 1/2-2	2300	Bu-GTU	4x5 1/2	B-L.	B-L.	Ti-6460.	WO.	36x6n	38x7n
White.....15 3/4	2400	Ow.....	3 3/4 x 5 1/2	Ow.	Ow.	Ow.....	SP.	34x5n	34x5n	Goifredson....50	2 1/2	3000	Bu-EU.	4 1/2 x 5 1/2	B-L.	B-L.	Ti-6560.	WO.	36x4	36x8
White.....20	3250	Ow.....	3 3/4 x 5 1/2	Ow.	Ow.	Ow.....	DR.	36x4	36x7d	Goifredson....80	4	3975	Bu-YTU	4 1/2 x 6	B-L.	B-L.	Ti-6666.	WO.	34x5	36x12
White.....40 3/4	4200	Ow.....	4 1/2 x 5 3/4	Ow.	Ow.	Ow.....	DR.	36x5	40x5d	Goifredson....100	5	4900	Bu-BTU	5x6 1/2	B-L.	B-L.	Ti-6760.	WO.	36x6	40x14
White.....45	4500	Ow.....	4 1/2 x 5 3/4	Ow.	Ow.	Ow.....	DR.	36x6	40x6d	Mapleleaf.....1 1/2	1 1/2	3000	Hi-300.	3 3/4 x 5 1/2	Ful.	Ful.	Sh-1501.	WO.	34x5n	36x6n
Wilcox.....AA1	1900	Bu-CTU	3 3/4 x 5 1/2	B-L.	B-L.	Ru-3600	SP.	35x5	35x5	Mapleleaf.....AA2	2	3600	Hi-400.	4x5 1/2	Ful.	Ful.	Sh-103.	WO.	36x4	36x7
Wilcox.....BB1 1/2	2550	Ow.....	4 1/2 x 5	B&B.	Ow.	Wa-2A.	DR.	36x6k	38x7k	Mapleleaf.....BB3	3	4050	Hi-500.	4 1/2 x 5 1/2	Ful.	Ful.	Sh-21.	WO.	36x4	36x4d
Wilcox.....CC2 1/2	3000	Ow.....	4 1/2 x 5	B&B.	Ow.	Wa-25A.	DR.	36x6k	40x8k	Mapleleaf.....CC4	4	4800	Hi-200.	4 1/2 x 5 1/2	Ful.	Ful.	Sh-31.	WO.	36x5	36x5d
Wilcox.....EE3 1/2	3950	Bu-YTU	4 1/2 x 6	M&E.	Ow.	Wa-5A.	DR.	36x5	36x10	Mapleleaf.....DD5	5	5625	Hi-1600.	4 1/2 x 5 1/2	Ful.	Ful.	Sh-51.	WO.	36x6	36x6d
Wilcox.....F5	4350	Bu-ATU	4 1/2 x 6 1/2	M&E.	Ow.	Wa-5A.	DR.	36x5	40x5	National.....FA1	1	.....	Wa-BUX	3 3/4 x 5 1/2	B-L.	B-L.	Ti-6352.	WO.	35x5n	35x5n
Wilson.....C1	1350	He-O	4 x 5	B&B.	Det.	Ti-6532	WO.	34x5n	34x5n	National.....GA1 1/2	1 1/2	.....	Wa-CU	4 1/2 x 5 1/2	H-S.	B-L.	Ti-6560.	WO.	36x5	36x10
Wilson.....F1 1/2	2270†	Co-J4.	3 3/4 x 5	B&B.	Cot.	Ti-6440	WO.	36x3 1/2	36x5k	National.....HD2 1/2	2 1/2	.....	Wa-DU	4 1/2 x 6 1/2	H-S.	B-L.	Ti-6666.	WO.	36x6	40x12
Wilson.....EA2 1/2	2825†	Co-K4.	4 1/2 x 5 1/2	B&B.	Cot.	Ti-6560	WO.	36x4k	36x7k	National.....NB3 1/2	3 1/2	.....	Wa-EU.	5x6 1/2	H-S.	B-L.	Ti-6760.	WO.	36x7	40x14
Wilson.....G3 1/2	3685†	Co-L4.	4 1/2 x 5 1/2	B&B.	Cot.	Ti-6660	WO.	36x5k	36x5ddk	National.....OA5	5	.....	Bu-CTU	3 3/4 x 5 1/2	B&B.	Cot.	Sh-1501.	WO.	34x5n	34x5n
Wilson.....H5	4520†	Co-B2.	4 1/2 x 6	B&B.	Cot.	Ti-6752	WO.	36x6k	40x6dk	Veteran.....M1 1/2	1 1/2	2699	Bu-HTU	4 1/2 x 5 1/2	B&B.	Cot.	Sh.	WO.	36x4	36x7
Yellow Cab. M22	1590	Co-V4.	3 3/4 x 5	B-L.	B-L.	Ti-5762	SB.	33x4 1/2n	33x4 1/2n	Veteran.....R3	3	4200	Bu-HTU	4 1/2 x 5 1/2	B&B.	Cot.	Sh-21.	WO.	36x4	36x7
Yellow Cab. M42	1640	Co-V4.	3 3/4 x 5	B-L.	B-L.	Ti-6352.	WO.	35x5n	35x5n	Veteran.....S4	4	5395	Bu-YTU	4 1/2 x 6	B&B.	Cot.	Sh-31.	WO.	36x5	36x10
Yellow Cab.....1-1 1/4	1740	Co.....	3 3/4 x 5	B-L.	B-L.	Ti.....	WO.													

Current Tractor Specifications

MAKE & MODEL	Drawbar-Pulley Rating	Recommended No. of 14 Ins. Plovs	Price	ENGINE		Weight (Lbs.)	Traction Members, Dimensions, Diameter & Face (Ins.)	MAKE & MODEL	Drawbar-Pulley Rating	Recommended No. of 14 Ins. Plovs	Price	ENGINE		Weight (Lbs.)	Traction Members, Dimensions, Diameter & Face (Ins.)
				Make	No. of Cyls. Bore & Stroke							Make	No. of Cyls. Bore & Stroke		
Allis-Chalmers...	6-12	1	\$295	LeR.	4-3 1/2 x 4 1/2	2500	48x6	Gray.....DU	18-36	4	2150	Wau.	4-4 1/2 x 6 1/2	6200	46x10
Allis-Chalmers...	15-25	3	1185	Mid.	4-4 1/2 x 5 1/2	4700	46x12	Gray.....EU	22-40	4	2385	Wau.	4-5 x 6 1/2	6900	46x10
Allis-Chalmers...	20-35	4	1885	Ow.	4-4 1/2 x 6 1/2	6150	50x12	Hart-Parr.....20	20	2	.....	Ow.	2-5 1/2 x 6 1/2	4438	46x10
Allwork.....D	20-38	4-5	1695	Ow.	1-5 x 7	6500	48x14	Hart-Parr.....30	30	3	.....	Ow.	2-6 1/2 x 7	5220	52x10
Allwork.....G	14-28	3	1495	Ow.	1-4 1/2 x 6	4800	48x12	Hart-Parr.....(Road)	30	3	.....	Ow.	2-6 1/2 x 7	7560	52x18
Allwork.....C	16-30	3	1295	Ow.	1-5 x 6	5200	48x12	Heider.....D	9-16	2	.....	Wau.	4-4 1/2 x 5 1/2	4000	51x8
Aultman-Taylor...	15-30	3-4	1900	Cl.	1-5 x 6 1/2	7800	70x12	Heider.....C	12-20	3	.....	Wau.	4-4 1/2 x 6 1/2	6000	57x10
Aultman-Taylor...	22-45	4-6	3100	Ow.	1-5 1/2 x 8	12500	70x20	Heider.....M	5-10	.....	.....	LeR.	4-3 1/2 x 4 1/2	2800	46x6
Aultman-Taylor...	30-60	8-10	4400	Ow.	1-7 x 9	22500	90x24	Huber.....(Light 4)	12-25	3	985	Wau.	4-4 1/2 x 5 1/2	5000	60x10
Avery.....15	15	3-4	.....	Ow.	1-4 1/2 x 6	4750	50x12	Huber.....(Super 4)	15-30	3	.....	Mid.	4-4 1/2 x 6	6000	60x10
Avery.....20-35	20-35	4-5	.....	Ow.	1-4 1/2 x 7	7500	60x16	LaCrosse.....M	6-12	1	501	Ow.	2-4 x 6	3090	48x7
Avery.....25-50	25-50	5-6	.....	Ow.	1-6 1/2 x 7	12500	69x20	LaCrosse.....H	12-24	3	850	Ow.	2-6 x 7	3800	56x10
Avery.....45-65	45-65	8-10	.....	Ow.	1-7 1/2 x 8	22000	87x24	Lauson.....S	12-25	3	.....	Mid.	4-4 1/2 x 5 1/2	4200	.....
Avery, Tr. Runner	.....	3	.....	Ow.	1-4 x 5 1/2	5000	x 8	Lauson.....T	15-30	4	.....	Bea.	4-4 1/2 x 6	6200	.....
Avery, Road Razer	.....	.....	.....	Ow.	6-3 x 4	4600	42x6	Leader.....D	12-18	2	375	Ow.	2-6 1/2 x 6	4800	50x12
Bates (St. Mule) H	15-25	3	.....	Mid.	1-4 1/2 x 5 1/2	3600	48x10	Leader.....N	16-32	3-4	1275	Cl.	1-5 x 6	5800	52x12
Bates (St. Mule) F	18-25	3	.....	Mid.	1-4 1/2 x 5 1/2	4850	56x10	Leader.....GU	16-32	3-4	2150	Cl.	1-5 x 6	.....	66x9
Bates (St. Mule) G	25-35	4	.....	Mid.	1-4 1/2 x 6	6500	x10	Lincoln.....A	15-30	3	1600	Bud.	1-4 1/2 x 6	5000	40x14
Bates (St. Mule) 40	30-40	4	.....	Mid.	1-4 1/2 x 6	8500	84x10	Little Giant.....B	16-22	4	.....	Ow.	1-4 1/2 x 5	5200	51x14
Best.....B	25-35	4	1250	Ste.	1-4 1/2 x 6	6000	66x12	Little Giant.....A	26-35	6	.....	Ow.	1-5 1/2 x 6	8700	66x20
Best.....30	30-40	4	.....	Ow.	1-4 1/2 x 6	8100	68x11	Lombard.....100	12-16	.....	.....	Ow.	6-5 1/2 x 7	19000	x12
Best.....60	40-60	9	.....	Ow.	1-6 1/2 x 8	18580	89x20	London.....12-25	3	.....	.....	Mid.	1-4 1/2 x 5 1/2	.....	48x12
Bryan.....Steam	15-30	3	2500	Ow.	2-4 x 5	5500	52x12	McCork-Deering	10-20	2	850	Ow.	4-4 1/2 x 5	3700	42x12
Case.....12-20	3	1095	Ow.	1-4 1/2 x 5	4230	42x12	42x12	McCork-Deering	15-30	3	1250	Ow.	4-4 1/2 x 6	5750	50x12
Case.....15-27	3-4	1350	Ow.	1-4 1/2 x 6	6600	52x14	52x14	Minneapolis.....12-25	3	.....	.....	Ow.	4-4 1/2 x 7	6600	56x12
Case.....22-40	4-5	2650	Ow.	1-5 1/2 x 6 1/2	10700	56x16	56x16	Minneapolis.....17-30	3-4	.....	.....	Ow.	4-4 1/2 x 7	6400	54x12
Case.....40-72	8-10	1900	Ow.	1-7 x 8	21200	72x20	72x20	Minneapolis.....22-44	4-5	.....	.....	Ow.	4-6 x 7	12440	62x20
Caterpillar.....2 Ton	15	3	.....	Ow.	1-4 x 5 1/2	4000	.....	Minneapolis.....35-70	8-10	.....	.....	Ow.	4-7 1/2 x 9	22500	85x30
Caterpillar.....5 Ton	25	4	.....	Ow.	1-4 1/2 x 6	9400	*	Moline (Un.).....D	8-9	2-3	725	Ow.	4-3 1/2 x 5	4103	52x8
Caterpillar.....10 Ton	40	6	.....	Ow.	1-6 1/2 x 7	20000	.....	Moline (Orc.).....D	9-8	2-3	725	Ow.	4-3 1/2 x 5	3893	44x8
Clatrac.....F	9-16	2	845	Ow.	1-3 1/2 x 4 1/2	1930	42x5 1/2	Monarch.....C	20-30	4	3800	Bea.	4-4 1/2 x 6	8700	66x12
Clatrac.....W	12-20	2	1345	Ow.	1-4 x 5 1/2	3455	48x8	Monarch.....E	25-40	5	5000	Bea.	4-4 1/2 x 6	12000	67x12
Eagle.....F	12-22	3	.....	Ow.	2-7 x 8	5850	48x12	Monarch.....E	35-60	6	6000	Bea.	6-4 1/2 x 6	15000	89x12
Eagle.....H	16-30	4	.....	Ow.	2-8 x 8	7100	48x12	Nichols-Shepherd	20-42	4-6	2600	Ow.	2-8 1/2 x 10	13500	64x20
E.B.....AA	12-20	3	.....	Ow.	1-4 1/2 x 5	4550	54x12	Nichols-Shepherd	25-50	6	3300	Ow.	2-9 1/2 x 12	20500	69x28
E.B.....Q	12-20	3	.....	Ow.	1-4 1/2 x 5	6500	60x12	Nichols-Shepherd	35-70	8-12	4030	Ow.	2-10 1/2 x 14	30000	73x32
E.B.....16-32	4	.....	Ow.	1-5 1/2 x 7	9400	72x16	72x16	Pioneer.....G	18-36	4	.....	Ow.	4-5 1/2 x 6	6500	60x18
Fageol.....19-12	2	1200	Lye.	4-3 1/2 x 5	3600	48x8 1/2	48x8 1/2	Pioneer.....C	40-75	10	.....	Ow.	4-7 x 8	24000	96x24
Fordson.....18	2	395	Ow.	4-4 x 5	2562	42x12	42x12	Rumely Oil Pull	12-30	3	.....	Ow.	2-6 x 8	6682	51x12
Frick.....A	12-20	2	1000	Erd.	4-4 x 6	5800	60x10	Rumely Oil Pull	16-30	4	.....	Ow.	2-7 x 8 1/2	9600	56x16
Frick.....C	15-28	3	1600	Bea.	4-4 1/2 x 6	6730	60x12	Rumely Oil Pull	20-40	6	.....	Ow.	2-8 x 10	12820	64x20

MAKE & MODEL	Drawbar-Pulley Rating	Recommended No. of 14 Ins. Plovs	Price	ENGINE		Weight (Lbs.)	Traction Members, Dimensions, Diameter & Face (Ins.)	MAKE & MODEL	Drawbar-Pulley Rating	Recommended No. of 14 Ins. Plovs	Price	ENGINE		Weight (Lbs.)	Traction Members, Dimensions, Diameter & Face (Ins.)
				Make	No. of Cyls. Bore & Stroke							Make	No. of Cyls. Bore & Stroke		
Rumely Oil Pull	30-60	8-10	.....	Ow.	2-10x12	26700	80x30	.....	.....	.....	.....	.....	.....	.....
Russell.....15-30	3-4	.....	.....	Cl.	4-5 x 6 1/2	6000	56x14	.....	.....	.....	.....	.....	.....	.....
Russell.....20-40	4-5	.....	.....	Cl.	4-5 1/2 x 7	7900	60x16	.....	.....	.....	.....	.....	.....	.....
Russell.....30-60	8-10	.....	.....	Cl.	4-8 x 10	22550	84x22	.....	.....	.....	.....	.....	.....	.....
Shaw-Enochs (Gr.)	.....	.....	.....	LeR.	4-3 1/2 x 4 1/2	4400	48x8	.....	.....	.....	.....	.....	.....	.....
Topp-Stewart.....B	30-45	4	.....	Wau.	4-4 1/2 x 6 1/2	7890	42x12	.....	.....	.....	.....	.....	.....	.....
Toro.....6-10	2	8675	LeR.	4-3 1/2 x 4 1/2	2900	41x9	.....	.....	.....	.....	.....	.....	.....	.....
Townsend.....10-20	2-3	800	Ow.	2-6 1/2 x 7	4500	48x12	.....	.....	.....	.....	.....	.....	.....	.....
Townsend.....15-30	3-4	1350	Ow.	2-7 x 8	5600	56x18	.....	.....	.....	.....	.....	.....	.....	.....
Townsend.....25-50	4-8	2500	Ow.	2-8 1/2 x 10	11500	60x24	.....	.....	.....	.....	.....	.....	.....	.....
Traylor.....6-12	1	500	LeR.	4-3 1/2 x 4 1/2	1750	38x10	.....	.....	.....	.....	.....	.....	.....	.....
Twin City.....12-20	3	1200	Ow.	1-4 1/2 x 6	4550	50x12	.....	.....	.....	.....	.....	.....	.....	.....
Twin City.....20-35	5	2750	Ow.	4-5 1/2 x 6 1/2	8100	60x20	.....	.....	.....	.....	.....	.....	.....	.....
Twin City.....40-65	8	4750	Ow.	4-7 1/2 x 9	23700	84x24	.....	.....	.....	.....	.....	.....	.....	.....
Uncle Sam.....C-20	12-20	2-3	990	Her.	4-4 x 5	3000	46x16	.....	.....	.....	.....	.....	.....	.....
Uncle Sam.....B-19	20-30	3-4	1535	Bea.	4-4 1/2 x 6	4650	50x12	.....	.....	.....	.....	.....	.....	.....
Uncle Sam.....D-21	20-30	3-4	1485	Bea.	4-4 1/2 x 6	4600	50x12	.....	.....	.....	.....	.....	.....	.....
Wallis.....OK	15-27	3	.....	Ow.	4-4 1/2 x 5 1/2	3660	48x12	.....	.....	.....	.....	.....	.....	.....
Waterloo Boy.....N	12-25	3	.....	Ow.	2-6 1/2 x 7	5889	52x12	.....	.....	.....	.....	.....	.....	.....
Wetmore.....12-25	3	1185	Wau.	4-4 x 5 1/2	2900	46x10	.....	.....	.....	.....	.....	.....	.....	.....
Wisconsin.....16-30	3-4	1730	Cl.	4-5 x 6	5600	52x12	.....	.....	.....	.....	.....	.....	.....	.....
Wisconsin.....22-40	4-5	2550	Cl.	4-5 1/2 x 7	7500	52x12	.....	.....	.....	.....	.....	.....	.....	.....
Yuba (Ball Tread)	15-25	4	2750	Wis.	4-4 1/2 x 6	5750	56x12	.....	.....	.....	.....	.....	.....	.....
Yuba (Ball Tread)	25-40	8	4500	Ow.	4-5 1/2 x 7	10130	*48x17 1/2	.....	.....	.....	.....	.....	.....	.....

GARDEN TRACTORS

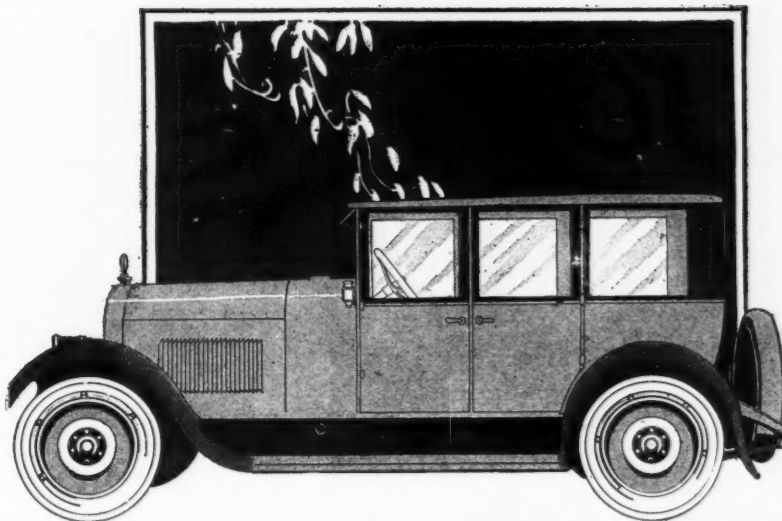
Aro.....F	3-6	1	\$385	Ow.	1-4 1/2 x 5	1000	30x4	.....	.....	.....	.....	.....	.....	.....
Beeman.....Jr.	1 1/2-1	1	195	B&S	1-2 1/2 x 2 1/2	210	30x3	.....	.....	.....	.....	.....	.....	.....
Beeman.....K	1 1/2-4	1	265	Ow.	1-3 1/2 x 4	550	25x3	.....	.....	.....	.....	.....	.....	.....
Bolens.....1	.....	1	180	B&S	1-2 1/2 x 1	190	30x4	.....	.....	.....	.....	.....	.....	.....
Centaur.....1923	2 1/2-5	1	345	N-W	1-4 1/2 x 4	700	28x4	.....	.....	.....	.....	.....	.....	.....
Do-It-All.....(Jack)	2 1/2-6	1	395	Ow.	1-3 1/2 x 3 1/2	750	.....	.....	.....	.....	.....	.....	.....	.....
Do-It-All.....(Baby)	2 1/2-6	1	495	Ow.	1-4 1/2 x 5	1200	28x4	.....	.....	.....	.....	.....	.....	.....
Do-It-All.....(Twin)	4-15	1	495	Ow.	2-3 1/2 x 3 1/2	800	32x4	.....	.....	.....	.....	.....	.....	.....
Kinkade.....1 1/2-3	1	190	Ow.	1-3 x 3 1/2	180	22 1/2 x 5 1/2	.....	.....	.....	.....	.....	.....	.....	.....
M.B.M. Red.....E	1-4 1/2	1	250	Ow.	1-3 1/2 x 4	410	20x3	.....	.....	.....	.....	.....	.....	.....
Motor Macultivator.....N.B.	2	1	148	Ow.	1-2 1/2 x 3 1/2	210	19 1/2 x 3 1/2	.....	.....	.....	.....	.....	.....	.....
Utilitor.....501	2 1/2-4	1	375	Ow.	2-2 1/2 x 4	750	32x4	.....	.....	.....	.....	.....	.....	.....
Utilitor.....501A	2 1/2-4	1	295	Ow.	1-3 1/2 x 4 1/2	750	24 1/2 x 4 1/2	.....	.....	.....	.....	.....	.....	.....
Utilitor.....501A	2 1/2-4	1	340	Ow.	1-3 1/2 x 4 1/2	925	24 1/2 x 4 1/2	.....	.....	.....	.....	.....	.....	.....

Current Passenger Car Specifications

(This list comprises cars distributed on a national basis)

PRICES						Wheel Base (Ins.)	Tire Size (Ins.)†	NAME AND MODEL	ENGINE				ELECTRICAL SYSTEM		Clutch: Type and Make	Gearset Make	Universal: Type and Make	REAR AXLE		BRAKES, Service and Emergency
OPEN MODELS			CLOSED MODELS						Make and Model	No. of Cyls. Bore and Stroke	Horse Power Rating (N.A.A.C.)	Carburetor Make	Generator and Starter Make	Ignition Make				Type and Make	Gear Ratio	
2-3 Pass.	4-5 Pass.	6-7 Pass.	Sport Models	2-3 Pass.	4-5 Pass.	6-7 Pass.														
\$1950e	\$1785e	\$1850	\$1885e	\$2250	\$2485	127	33x4 1/2	American.....D-66	H-S..11000	6-3 1/2x5	29.40	Strom.	G-D..	A-K...	s-p B&B.	B & B.	m Hart.	F Salis	4.50	R-L-R
	1195		1395e		1495	114	32x4 1/2	Anderson.....41	Cont...6 Y	6-3 1/2x4 1/2	23.44	Zenith.	West...	West...	s-p B&B.	Durston.	f Univ.	1/2 F Salis	4.75	R-L-T
1495	1495	1595	(1785b) 1915e	1995e	1995d	122	32x4	Anderson.....Series 50	Cont...8 R	6-3 1/2x4 1/2	27.34	Rayfield.	Remy.	Remy.	s-p B&B.	Durston.	f Univ.	3/4 F Salis	4.62	R-L-T
	1535				2200	132	33x4	Anderson.....Series 50	Cont...8 R	6-3 1/2x4 1/2	27.34	Rayfield.	Remy.	Remy.	s-p B&B.	Durston.	f Univ.	3/4 F Salis	4.62	R-L-T
	2800	2900			3750	130	32x4	Apperson.....6	Own.....	6-3 1/2x4 1/2	23.44	Strom.	Remy.	Remy.	s-p Rock.	Mech.	m Thie.	3/4 F Col.	5.10	R-L-R
	1095		1325d	1495e	1595	114	31x4	Apperson.....8-23-S	Own.....	8-3 1/2x5	33.80	Johnson.	Bijur.	Remy.	m-d Own.	Own.	m Thie.	1/2 F Col.	4.25	R-L-R
	1595		1850d			124	32x4 1/2	Auburn.....6-43	Cont...6 Y	6-3 1/2x4 1/2	23.44	Strom.	Remy.	Remy.	s-p B&B.	Warner.	m Detr.	1/2 F Col.	4.60	R-L-T
								Auburn.....6-63	Own.....	6-3 1/2x5	25.35	Strom.	Remy.	Remy.	s-p B&B.	Warner.	m Thie.	1/2 F Col.	4.60	R-L-T
	1395		1495d		1850	118	32x4	Barley.....	Cont...6 Y	6-3 1/2x4 1/2	23.44	Strom.	Delco.	Delco.	s-p B&B.	Fuller.	f M&E.	1/2 F Col.	5.10	R-L-R
					2250p															
935	965		800g	1395e	1495	109	31x4	Buick.....1924	Own.....	4-3 1/2x4 1/2	18.23	Marvel.	Delco.	Delco.	m-d Own.	Own.	m Own.	3/4 F Own	4.66	FL-R
1275	1295		1135g	1995e	1995	120	32x4	Buick.....1924	Own.....	6-3 1/2x4 1/2	27.34	Marvel.	Delco.	Delco.	m-d Own.	Own.	m Own.	F Own	4.10	FL-R
1385g		1565	(1675a) 1725d		2235f	128	33x4 1/2	Buick.....1924	Own.....	6-3 1/2x4 1/2	27.34	Marvel.	Delco.	Delco.	m-d Own.	Own.	m Own.	F Own	4.70	FL-R
2985	2985	2985		3875	(3950) 4150	132	33x5	Cadillac.....V 63	Own.....	8-3 1/2x5 1/2	31.25	Own.	Delco.	Delco.	m-d Own.	Own.	m Spicer	F Tim	Opt.	F-L-R
1750	1790		2230d	2480e	2675	122	32x4 1/2	Case.....X	Cont...8 R	6-3 1/2x4 1/2	27.34	Rayfield.	Delco.	Delco.	m-d Own.	Own.	f Sneed.	1/2 F Col.	5.09	R-L-R
			1990	1950e	3325	129	33x5	Case.....Y	Cont...6 T	6-3 1/2x4 1/2	31.54	Rayfield.	Delco.	Delco.	m-d Own.	Own.	f Sneed.	3/4 F Col.	4.09	R-L-R
	1185		1335d		1535	117	32x4	Chalmers.....1923	Own.....	6-3 1/2x4 1/2	25.35	Strom.	A-L.	Remy.	m-d Own.	Own.	m Hardy	1/2 F Ad.	5.13	R-L-R
	1295				2095	122	32x4	Chalmers.....1923	Own.....	6-3 1/2x4 1/2	25.35	Strom.	A-L.	Remy.	m-d Own.	Own.	m Hardy	1/2 F Ad.	5.13	R-L-R
1595	1485	1635	1785e		1785	123	32x4	Chandler.....Six	Own.....	6-3 1/2x5	29.40	Strom.	Bosch.	Bosch.	s-p B&B.	Own.	f Own	1/2 F Own	4.45	R-L-T
	1685				2270															
490	495	395g		640	795	103	30x3 1/2	Chevrolet...Superior	Own.....	4-3 1/2x4	21.76	Zenith	Remy.	Remy.	c Own.	Own.	m Own.	1/2 F Own	3.77	R-L-R
1085	1045		(1145d) 1295a	1345	1365	112 1/2	31x4	Cleveland.....42	Own.....	6-3 1/2x4 1/2	22.50	Strom.	Bosch.	Bosch.	s-p B&B.	Own.	m Mech.	1/2 F Own	4.90	R-L-T
				1445	1545															
	2175	2175		2750e	3075	127 1/2	33x5	Cole.....Master	Nort.M309	8-3 1/2x4 1/2	39.20	Johnson.	Delco.	Delco.	m-d Nort.	Nort.	m Spicer	F Col.	4.70	R-L-R
	1475			1925e	1995	115	32x4	Columbia...Big Six	Cont...8 R	6-3 1/2x4 1/2	27.34	Strom.	A-L.	A-K.	s-p B&B.	Durston.	m Spicer	1/2 F Tim	4.75	R-L-R
985e	985		(1195d) 1495d	1395	1495	115	31x4	Columbia...Light Six	Cont...6 Y	6-3 1/2x4 1/2	23.44	Strom.	A-L.	A-L.	s-p B&B.	Durston.	m Spicer	1/2 F Tim	5.10	R-L-T
1395p	1295		1595e	1495	2195p	116	32x4	Courier.....	Falls. 8000	6-3 1/2x4 1/2	23.44	Strom.	West.	A-K.	s-p B&B.	Muncie.	f Flex.	3/4 F Col.	5.10	R-L-R
	3100	3100				138	33x4 1/2	Crawford...23-6-70	Cont...6 T	6-3 1/2x5 1/2	31.54	Zenith.	West.	Bosch.	m-d B-L.	B-L.	m Spicer	1/2 F Tim		R-L-R
	5800	6300		3500e	4500	138	33x5	Crawford-Dagmar-6-70	Cont...6 T	6-3 1/2x5 1/2	31.54	Zenith.	West.	Bosch.	m-d B-L.	B-L.	m Spicer	1/2 F Tim		R-L-R
					7650	142	33x5	Cunningham...V4	Own.....	8-3 1/2x5	45.00	Strom.	Delco.	Delco.	m-d Own.	Own.	f Sneed	F Tim	4.23	R-L-R
5000	4650	4700	4650e		6350	132	33x5	Daniels.....23-38	Own.....	8-3 1/2x5 1/2	39.20	Zenith	Delco.	Delco.	m-d Own.	Own.	m Spicer	F Tim	4.23	R-L-R
		4800			5600															
	5000	5150		6000e	6600	132	35x5	Daniels.....23-38	Own.....	8-3 1/2x5 1/2	39.20	Zenith.	Delco.	Delco.	m-d Own.	Own.	m Spicer	F Tim	4.23	R-L-R
1295	1295		1495e		1595	115	31x4	Davis.....71	Cont...7 U	6-3 1/2x4 1/2	23.44	Strom.	Delco.	Delco.	s-p B&B.	Warner.	m M&E.	1/2 F Tim	5.10	R-L-R
1595	1595		1095d	2095		120	32x4 1/2	Davis.....63	Cont...8 R	6-3 1/2x4 1/2	27.34	Strom.	Delco.	Delco.	s-p B&B.	Warner.	m Peters	1/2 F Tim	5.15	R-L-R
850	880		730g	1035	1250	116	32x4	Dodge Brothers.....	Own.....	4-3 1/2x4 1/2	24.03	Stewart.	N.E.	N.E.	m-d Own.	Own.	m Own.	1/2 F Own	4.16	R-L-R
				1385																
	3950	3950	4150e	4985e	5550	136	33x5	Dorris.....6-80	Own.....	6-4 x5	38.40	Strom.	West.	Bosch.	m-d Own.	Warner.	m Spicer	1/2 F Tim	4.23	R-L-R
870	885		905e	1240	1350	108	31x4	Dort.....KB	Lyc..KB	4-3 1/2x5	19.60	Carter.	Bosch.	Comm.	m-d Det.	Own.	m Mech.	3/4 F Fin.	4.66	R-L-R
1010	1025		1135e	1355		115	31x4	Dort.....25-20	Falls.T8000	6-3 1/2x4 1/2	23.44	Carter.	Bosch.	Comm.	m-d Det.	Own.	m Mech.	3/4 F Fin.	4.66	R-L-R
5750	5500	5900	5750e		7250	134	33x5	Duesenberg Straight 8	Own.....	8-2 1/2x5	26.45	Strom.	Delco.	Delco.	s-p Own.	Own.	f Chi.	1/2 F Own	4.45	F-L-R
890	890		1065d	1365	1465	109	31x4	Durant.....A-22	Cont..Spec	4-3 1/2x4 1/2	24.03	Till.	A-L.	A-L.	s-p Own.	Warner.	m Spicer	1/2 F Ad.	4.33	R-L-R
1600	1650		2250	2400		123 1/2	32x4 1/2	Durant.....B-22	Anst...D	6-3 1/2x4 1/2	25.35	Rayfield.	A-L.	A-L.	s-p Anst.	Warner.	m Spi	1/2 F Tim	5.15	R-L-R
1485	1095		1275d	1395e	1595	112	32x4	Earl.....40	Own.....	4-3 1/2x5 1/2	18.91	Scot.	A-L.	Comm.	s-p B&B.	Own.	f Own.	1/2 F Own	4.87	R-L-T
	995		1135d	1425	p1565d	112	31x4	Elcar.....4-40	Lyc...K	4-3 1/2x5	21.03	Strom.	Delco.	Delco.	s-p B&B.	Warner.	m Peters	3/4 F Salis	4.50	R-L-R
	1395		1595d	1995e	p2195d	118	32x4	Elcar.....6-60	Cont...8 R	6-3 1/2x4 1/2	27.34	Strom.	Delco.	Delco.	s-p B&B.	Warner.	m Spicer	1/2 F Salis	4.50	R-L-R
	1045			1115	1145	108 1/2	32x4	Essex.....	Own.....	4-3 1/2x5	18.23	Own.	Bosch.	Bosch.	m-d Own.	Own.	m Spicer	1/2 F Own	4.66	R-L-R
1195	1195		1195	1895e	1985	120	32x4 1/2	Flint.....	Cont..Spec	6-3 1/2x5	27.34	Strom.	DeJon.	DeJon.	s-p Own.	Warner.	m Spicer	1/2 F Ad.		R-L-R
269r	298g	235g		530	725	100	30x3 1/2	Ford.....T	Own.....	4-3 1/2x4	22.50	Own.	Own.	Own.	m-d Own.	Own.	m Own.	1/2 F Own	3.63	T-L-R
2975	2975		3975	3975		132	32x4 1/2	Fox.....Air-Cooled	Own.....	6-3 1/2x5	27.34	Zenith.	West.	Scintilla	m-d B-L.	B-L.	m Spicer	1/2 F Tim	4.90	R-L-R
	1950		(2750e) 2850f	2250	2950d	115	32x4	Franklin.....10	Own.....	6-3 1/2x4	25.35	Own.	A-K.	A-K.	s-p B&B.	Own.	m Spicer	1/2 F Own	4.73	T-L-R
				2850f																
905	995		1145e	1145	1445	112	32x4	Gardner.....Series 5	Lyc...CE	4-3 1/2x5	21.76	Zenith.	West.	West.	s-p B&B.	Mech.	m Peters	3/4 F Fin.	4.80	R-T
490	520			750	835	100	30x3 1/2	Gray.....	Own.....	4-3 1/2x4	21.03	Scot.	West.	West.	s-p Own.	Own.	m Mech.	1/2 F Tim	3.90	R-L-T
				785																
2250	2250		2850j	2600		120	32x4 1/2	H.C.S.....Series 4	Weid.	4-3 1/2x5 1/2	22.50	Strom.	Delco.	Delco.	m-d B-L.	B-L.	m Spicer	1/2 F Own	4.63	R-L-R
	2650					126	32x4 1/2	H.C.S.....Series 6	Midw.	6-3 1/2x5	29.40	Strom.	Delco.	Delco.	m-d B-L.	B-L.	m Spicer	1/2 F Own	4.36	R-L-R
1350			1350j	1750		115	32x4 1/2	Handley.....6-40	Falls.T8000	6-3 1/2x4 1/2	23.44	Strom.	Bosch.	Bosch.	m-d Mech.	Mech.	m Mech.	Tim		R-L-T
						125	32x4 1/2	Handley.....6-60	Midw.	6-3 1/2x5</										

The Price—(and of course the car) that proved the Shows' sensation!



Coachbilt Anderson Aluminum Body; 6 Cylinder Red Seal Continental Motor; Westinghouse Starting, Lighting and Ignition; Borg & Beck Clutch; Cord Tires; Alemite Lubrication; Snubbers; Motometer; Wind Shield Cleaner; Wind Shield Shade; Foot Dimmer for Headlights; Cowl Ventilator; Heater; Foot Rest; Vanity Set; Dome Light; Reading Lamp. Average 19 miles per gallon of gas; Wheelbase 115 inches; Color—Maroon body with black mud guards.

The Sedan
only

\$1695

Touring Car \$1195

Sport Touring \$1445

Coach \$1495

Sport Sedan \$1895

f. o. b. factory

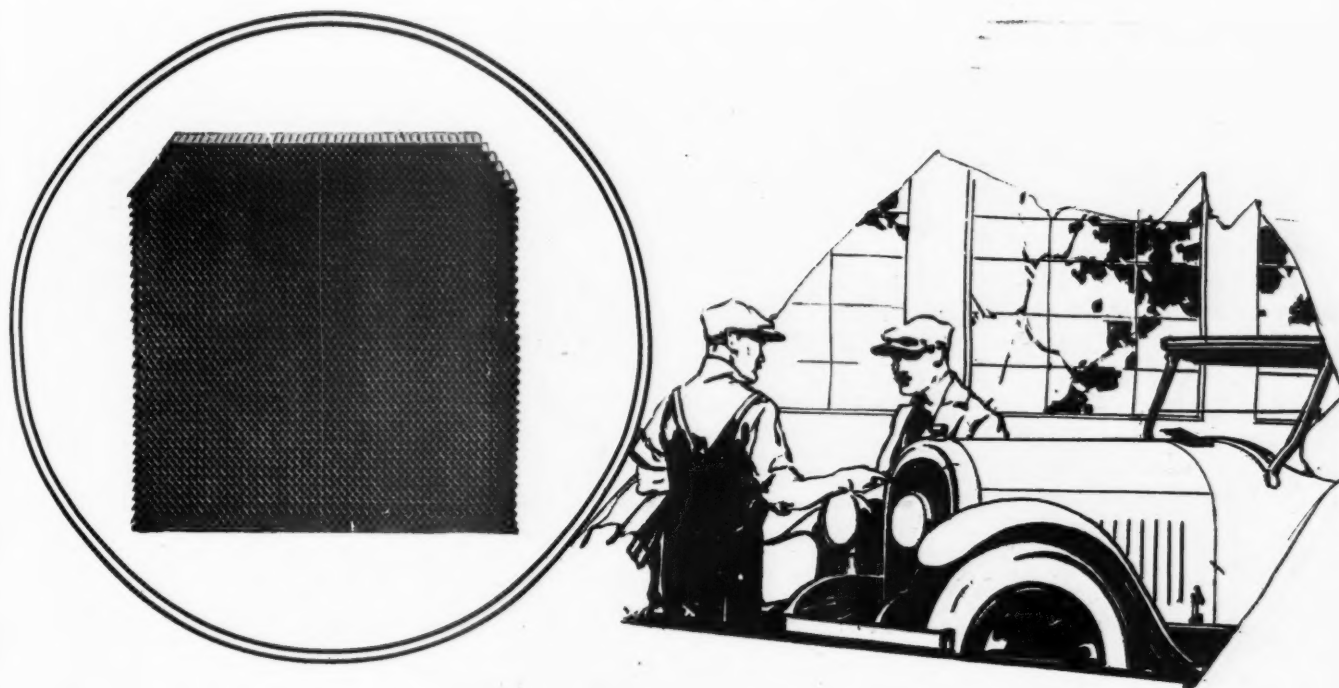
*Direct-with-factory contract
with maximum discount.
Ask about it. Anderson
Motor Co., Rock Hill, S. C.*

The Coachbilt
ANDERSON
ALUMINUM SIX

Current Passenger Car Specifications

(This list comprises cars distributed on a national basis)

PRICES							Wheel Base (Ins.)	Tire Size (Ins.)	NAME AND MODEL	ENGINE			ELECTRICAL SYSTEM			Gearset Make	Universal Type and Make	REAR AXLE			
OPEN MODELS			CLOSED MODELS							Make and Model	No. Cyls. Bore and Stroke	Horse Power Rating (N.A.A.C.)	Carburetor Make	Generator and Starter Make	Ignition Make			Clutch Type and Make	Type and Make	Gear Ratio	BRAKES, Service and Emergency
2-3 Pass.	4-5 Pass.	6-7 Pass.	Sport Models	2-3 Pass.	4-5 Pass.	6-7 Pass.															
\$2385	\$1885	\$2385	\$2385e		3375	3075	124	32x4 1/2	Kissel.....45	Own.....	6-3 1/2x5 1/2	26.38	Strom.....	Remy.....	Remy.....	m-d War.....	Warner.....	m Spicer	F Own	3.92	R-L-R
5000	5000	5000	4200e		3300	6500	132	33x5	LaFayette.....	Own.....	8-3 1/2x5 1/2	33.80	Johnson.....	Delco.....	Delco.....	m-d Own.....	Own.....	m Own.....	F Own	4.58	R-L-R
1795	1795	1795	2145d		2345	2345	123	32x4 1/2	Lexington.....23	Anst.....C	6-3 1/2x4 1/2	25.35	Rayfield.....	G-D.....	Conn.....	m-d Own.....	Warner.....	f Sneed.	F Own	5.10	R-L-R
3900	3900e	3900		4600e	4400	4900	136	33x5	Lincoln.....	Own.....	8-3 1/2x5	36.45	Strom.....	Delco.....	Delco.....	m-d Own.....	Own.....	m Spicer	F Tim	1.58	R-L-R
8090	9500e	9600			11750	11600	142	35x5	Locomobile... Series 8	Own.....	6-4 1/2x5 1/2	48.00	Ball&B.....	West.....	Delco.....	m-d Own.....	Own.....	m Own.....	F Own	3.85	R-L-R
3385	3185	3185			4385	4385	136	32x4 1/2	Marmon.....34	Own.....	6-3 1/2x5 1/2	33.75	Strom.....	Delco.....	Delco.....	m-d Own.....	Own.....	m Spicer	3/4 F Own	4.10	R-L-R
795	795	795	895b	935	1195	1685d	109	31x4	Maxwell.....	Own.....	4-3 1/2x4 1/2	21.03	Stewart.....	Remy.....	Remy.....	e Own.....	Own.....	f Own.....	1/2 F Own	4.60	R-L-R
5400	5600	5700		6720	6600e	6810	140	33x5	McFarlan.....1923	Own.....	6-4 1/2x6	48.60	Rayfield.....	West.....	West.....	m-d M&E.....	B-L.....	m Peters	F Tim	3.75	R-L-R
3950b	3950b	3950e	3950e	4700	4850	5250	132	32x4 1/2	Mercer..... Series 5	Own.....	4-3 1/2x6 1/2	22.50	Ball&B.....	West.....	Eisem.....	m-d Own.....	Own.....	m Spicer	F Own	3.87	T-R-R
1295	1295	1295	1495d	1585e	1895	1895	115	31x4	Mercer.....6	Own.....	6-3 1/2x5	33.75	Strom.....	West.....	Eisem.....	m-d Own.....	Own.....	m Spicer	3/4 F Own	5.70	T-R-R
			1785	1995e	2585	2485	128	32x4 1/2	Moore.....U6-40	Cont.....6 Y	6-3 1/2x4 1/2	23.41	Strom.....	Delco.....	Delco.....	s-p B&B.....	Warner.....	m Spicer	1/2 F Tim	5.10	R-L-R
			1995f		2685				Moore.....6-58	Cont.....8 R	6-3 1/2x4 1/2	27.34	Strom.....	Delco.....	Delco.....	s-p B&B.....	B-L.....	m Spicer	1/2 F Tim	5.09	R-L-R
1240	1240	1390	1045e		2090	2190	121	33x4	Nash.....691-3-6-7	Own.....	6-3 1/2x5	25.35	Marvel.....	Delco.....	Delco.....	s-p B&B.....	Own.....	m Own.....	1/2 F Own	4.50	R-L-R
915	935		1195d		1445		112	33x4	Nash.....692-4-5-8	Own.....	6-3 1/2x5	25.35	Marvel.....	Delco.....	Delco.....	s-p B&B.....	Own.....	m Own.....	1/2 F Own	4.80	R-L-R
					1275				Nash.....41-8	Own.....	4-3 1/2x5	18.23	Marvel.....	Delco.....	Delco.....	s-p B&B.....	Own.....	m Own.....	1/2 F Own	4.88	R-L-R
2175	2475e	2375	2485d		3250	3285	130	32x4 1/2	National.....BB	Own.....	6-3 1/2x5 1/2	29.40	Rayfield.....	West.....	Delco.....	s-p B&B.....	B-L.....	m Univ.....	F Col.	4.08	R-L-R
2500	2500e	2600e			3725		128	33x5	Noma.....4C	Cont.....8 R	6-3 1/2x4 1/2	27.34	Zenith.....	Delco.....	Delco.....	s-p B&B.....	Detroit.....	m Spicer	1/2 F Tim	4.45	R-L-R
945	915		1095a	1195	1345		113	31x4	Oakland.....6-54	Own.....	6-2 1/2x4 1/2	19.00	Marvel.....	Remy.....	Remy.....	e Hoos.....	Muncie.....	m Mech.....	1/2 F Own	4.70	F-T
975	975		1095d	1395					Oakland.....6-54	Own.....	6-2 1/2x4 1/2	19.00	Marvel.....	Remy.....	Remy.....	e Hoos.....	Muncie.....	m Mech.....	1/2 F Own	4.70	F-T
	1850	1735	1075e	1195	1595		115	32x4	Oldsmobile.....43 A	Own.....	4-3 1/2x5 1/2	21.86	Zenith.....	Delco.....	Delco.....	s-p B&B.....	Muncie.....	m Own.....	3/4 F Own	4.70	R-L-R
1625p	1375		1075e	1875	2025		122	33x4 1/2	Oldsmobile.....46	Own.....	8-2 1/2x4 1/2	26.45	Ball&B.....	Delco.....	Delco.....	e Own.....	Muncie.....	m Spicer	F Own	4.93	R-L-R
495	495		395g	795	795		110	32x4	Oldsmobile.....47	Own.....	8-2 1/2x4 1/2	26.45	Johnson.....	Delco.....	Delco.....	s-p B&B.....	Muncie.....	m Own.....	3/4 F Own	4.50	R-L-R
	695						106	30x3 1/2	Overland.....91	Own.....	4-3 1/2x4	19.60	Till.....	A-L.....	A-L.....	s-p B&B.....	Own.....	m Own.....	1/2 F Own	4.50	R-L-R
							106	30x3 1/2	Overland.....92	Own.....	4-3 1/2x4	19.60	Till.....	A-L.....	A-L.....	s-p B&B.....	Own.....	m Own.....	1/2 F Own	4.50	R-L-R
2485	2485	2650e	3175e	3275	3550d	120	33x4 1/2	Packard.....126	Packard.....133	Own.....	6-3 1/2x5	27.34	Own.....	A-K.....	Delco.....	m-d Own.....	Own.....	m Spicer	1/2 F Own	4.66	R-L-R
3850	3650		4550e	4725	4700e	136	33x5	Packard.....133	Packard.....136	Own.....	8-3 1/2x5	36.45	Own.....	A-K.....	Delco.....	m-d Own.....	Own.....	m Spicer	1/2 F Own	4.70	F-R
2695	2450	2450		3235	3235	131	33x4 1/2	Packard "Eight".....143	Packard "Eight".....143	Own.....	8-3 1/2x5	36.45	Own.....	Dyneto.....	Delco.....	m-d Own.....	Own.....	m Spicer	1/2 F Own	4.70	F-R
				3235	3235	131	33x4 1/2	Paige.....6-70	Paige.....6-70	Cont.....9 A	6-3 1/2x5	33.75	Rayfield.....	Remy.....	A-K.....	m-d Long.....	Warner.....	m Mech.....	1/2 F Tim	4.60	R-L-R
1550	1390	1425	1465d	2395d	2395	120	32x4 1/2	Peterson.....23-6-52	Peterson.....23-6-52	Cont.....8 R	6-3 1/2x4 1/2	27.34	Strom.....	Delco.....	Delco.....	s-p B&B.....	Durston.....	m Hart.....	1/2 F Salis	4.50	R-L-R
2090	2090	2260g	3300	3390	3840	128	33x5	Peerless.....23	Peerless.....23	Own.....	8-3 1/2x5	33.80	Ball&B.....	Delco.....	Delco.....	m-d Own.....	Own.....	m Spicer	1/2 F Tim	4.90	R-L-R
5250	5250	5250		6900	6800	138	33x5	Pierce-Arrow.....	Pierce-Arrow.....	Own.....	6-4 1/2x5 1/2	38.40	Own.....	Delco.....	Delco.....	m-d Own.....	Own.....	m Spicer	1/2 F Own	4.29	R-L-R
	1695	1745	1745	2445	2495	126	32x4 1/2	Pilot.....6-50	Pilot.....6-50	H-S.....90	6-3 1/2x5	25.35	Till.....	Wagner.....	Wagner.....	s-p Hoos.....	Muncie.....	m Blood.....	3/4 F Col.	4.67	R-L-R
2535	2535	2585d	2635d	3385	3585	126 1/2	32x4 1/2	Premier.....6-D	Premier.....6-D	Own.....	6-3 1/2x5 1/2	27.34	Strom.....	Delco.....	Delco.....	s-p B&B.....	Own.....	m Spicer	1/2 F Col.	4.58	R-L-R
	2300	2375	2400e	3000d	3050	3250	124	32x4 1/2	R & V Knight.....H	Own.....Kn't	6-3 1/2x4 1/2	29.40	Strom.....	A-L.....	A-L.....	s-p B-L.....	B-L.....	m Spicer	1/2 F Tim	5.40	R-L-R
1335	1335	1545d		1835e	1835e	120	32x4	Reo.....76	Reo.....76	Own.....	6-3 1/2x5	24.34	Rayfield.....	N.E.....	N.E.....	m-d Own.....	Own.....	m Own.....	1/2 F Tim	4.70	R-L-R
3200e	3200	3200e	3200e	4000	4000	131	32x4 1/2	Revere.....M	Revere.....M	Dues.....	6-4 1/2x6	30.63	Strom.....	West.....	Boach.....	m-d B-L.....	B-L.....	m Spicer	3/4 F Stud	3.44	R-L-R
1485	1485	1885e	1885e	1985	1985	117	32x4	Rickenbacker.....B	Rickenbacker.....B	Own.....	6-3 1/2x4 1/2	23.44	Strom.....	Boach.....	Boach.....	s-p Own.....	Warner.....	m Mech.....	3/4 F Col.	4.63	R-L-R
1635	1635	2035e	2035e	2135	2135	117	32x4	Rickenbacker.....B	Rickenbacker.....B	Own.....	6-3 1/2x4 1/2	23.44	Strom.....	Boach.....	Boach.....	s-p Own.....	Warner.....	m Mech.....	3/4 F Col.	4.63	F-T
2685	2485	2685	2750e	3285	3585	3585d	128	32x4 1/2	Roamer.....6-54-E	Cont.....12XD	6-3 1/2x5 1/2	29.40	Strom.....	West.....	Split.....	s-p B&B.....	G-L.....	f Sneed.....	1/2 F Tim	4.60	R-L-R
				3950f	4000				Roamer.....6-54-E	Cont.....12XD	6-3 1/2x5 1/2	29.40	Strom.....	West.....	Split.....	s-p B&B.....	G-L.....	f Sneed.....	1/2 F Tim	4.60	R-L-R
3685	3485	3800	3650e	4250p	3950	138	32x4 1/2	Roamer.....4-75-E	Roamer.....4-75-E	Rech.....	4-4 1/2x6	28.90	Strom.....	West.....	Split.....	s-p B-L.....	B-L.....	f Sneed.....	1/2 F Tim	4.08	R-L-R
3785	3785		4050p	4050p		128	32x4 1/2	Roamer.....4-75-E	Roamer.....4-75-E	Rech.....	4-4 1/2x6	28.90	Strom.....	West.....	Split.....	s-p B-L.....	B-L.....	f Sneed.....	1/2 F Tim	4.08	R-L-R
10900	10900	10950		12800	12850	143 1/2	33x5	Rolls-Royce.....40-50	Rolls-Royce.....40-50	Own.....	6-4 1/2x4 1/2	48.60	Own.....	Bijur.....	Boach.....	e Own.....	Own.....	m Own.....	F Own	3.70	R-L-R
				13500	12900	118	32x4	Rubay.....	Rubay.....	Own.....	4-2 1/2x5 1/2	12.10	Strom.....	Boach.....	Boach.....	s-p Own.....	Own.....	m Univ.....	F Own	5.10	F-L-R
1615	1615		2615d	5250	5250	118	33x4	Sayers Six.....DP	Sayers Six.....DP	Cont.....8 R	6-3 1/2x4 1/2	27.34	Strom.....	Delco.....	Delco.....	s-p B&B.....	G-L.....	m Arvac.....	1/2 F Std.	1.75	R-L-R
875	875			5100	5200	108	30x3 1/2	Seneca.....L-2 & O-2	Seneca.....L-2 & O-2	Lye.....KB	4-3 1/2x5	19.60	Zenith.....	A-L.....	A-L.....	s-p B&B.....	G-L.....	m Univ.....	F Peru	1.75	R-L-R
985	985			5250	5250	112	31x4	Seneca.....50e & 51c	Seneca.....50e & 51c	Lye.....KB	4-3 1/2x5	21.03	Zenith.....	A-L.....	A-L.....	s-p B&B.....	G-L.....	m Univ.....	F Peru	1.75	R-L-R
2750	2750	2750	2425g	3585	3985	130	32x4 1/2	Stanley.....740	Stanley.....740	Own.....	2-4 x5		None.....	Bijur.....	None.....	None.....	None.....	None.....	1/2 F Own	1.50	R-L-R
319r	348r	285r	580	645	102	30x3 1/2	Star.....	Star.....	Cont.....Spec	4-3 1/2x4 1/2	15.63	Till.....	A-L.....	A-L.....	s-p Own.....	Warner.....	m Spicer	1/2 F Tim	4.87	R-L-R	
2250	2250	2450	2275e	3150	3450	125	31x4 1/2	Stearns-Knight.....SKL4	Stearns-Knight.....SKL4	Own.....Kn't	6-3 1/2x5 1/2	22.50	Rayfield.....								



"Better let me install one of those New FEDDERS Shallow Cores!"

"IT will last longer, give you perfect satisfaction, and save you money in the end."

That's the best thing to say to a customer bringing in a car with a damaged or inefficient radiator. It is quicker, easier, more profitable and efficient than any repair tinkering.

A FEDDERS Shallow Core is the best possible cure for radiator trouble. It is the very last word in radiator practice, lighter, stronger, with greater

cooling efficiency, wider water passages, freeze-proof and clog-proof.

The name FEDDERS is as old as the industry, and has steadily followed the forward march of the industry. To-day, as in 1897 and all the years between, it is found on the radiators of America's Quality Cars.

We want dealers in every community. Write for Fedders' dealer proposition on guaranteed radiator cores.

(CATALOGED)
in the Red Directory

FEDDERS
AUTOMOTIVE RADIATORS

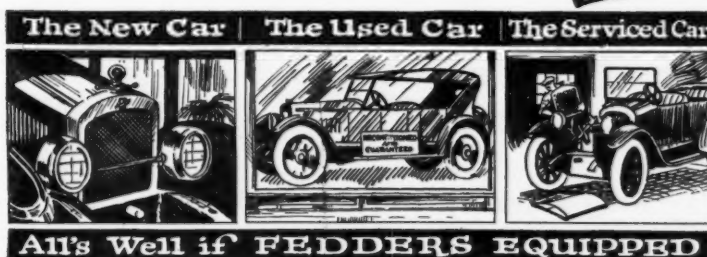
FEDDERS MANUFACTURING CO., Inc.
BUFFALO, N. Y.

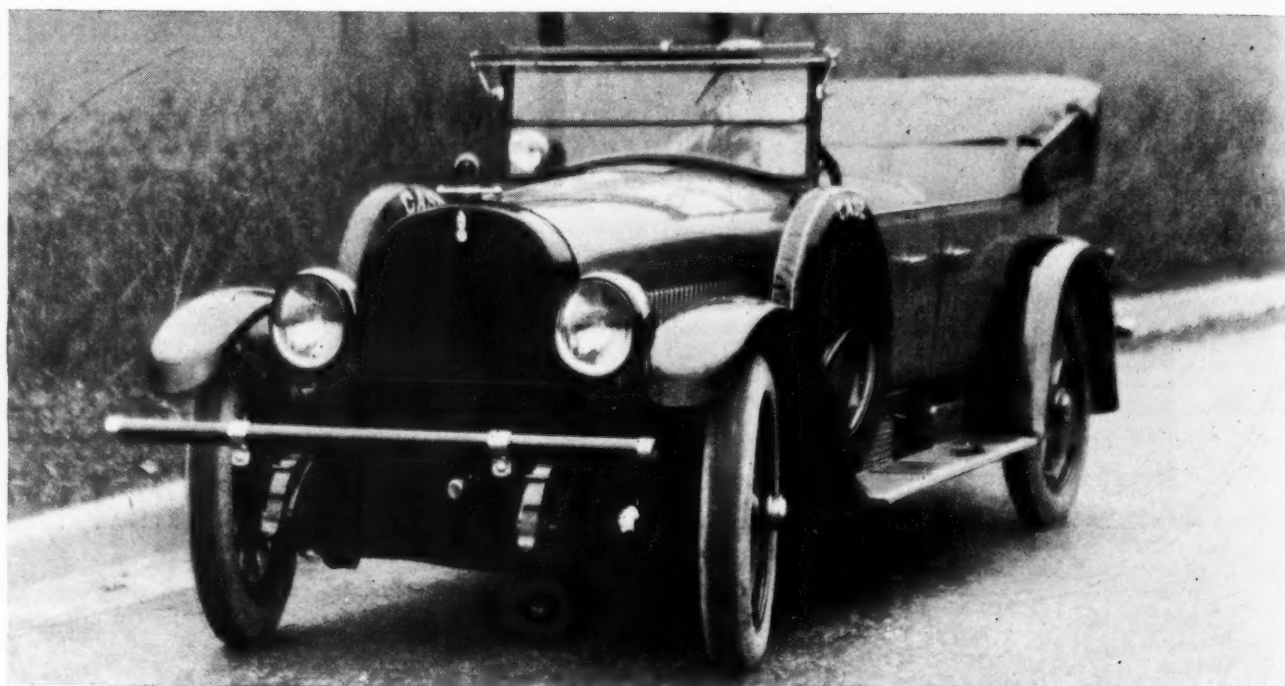
Branches and Distributing Agencies:

BALTIMORE—Enterprise Auto Repair Works, 1908-12 Frederick Ave. **CLEVELAND**—Fedders Mfg. Co., 3610 Superior Ave. **DETROIT**—Olympian Radiator Repair Co., 1981 Grand River Ave. **INDIANAPOLIS**—Seth Klein Radiator Co., 820 North Meridian St. **NEW YORK**—Henry Jelinek Co., Inc., 364-366 West 50th St. **SAN FRANCISCO**—Feldmans Auto Metal Works, 76 Eighth St.

What FEDDERS Radiators can do for the Dealer.

3. On the Serviced Car





Case Cars in Cook County

BETWEEN January 1st and June 30th, 274 Case Cars were sold in Cook County—virtually all in Chicago, Illinois, one of the most highly competitive markets in the United States.

In this same territory the sales of eight other cars—priced with Case or below—were as follows:

A	96	E	106
B	121	F	87
C	53	G	119
D	78	H	66

These were widely advertised cars. Case is widely sold. (Names in place of the letters above will be supplied on request.)

Case dealers and distributors know the translation of these figures into profits. Do you?

J. I. CASE T. M. COMPANY, RACINE, WISCONSIN



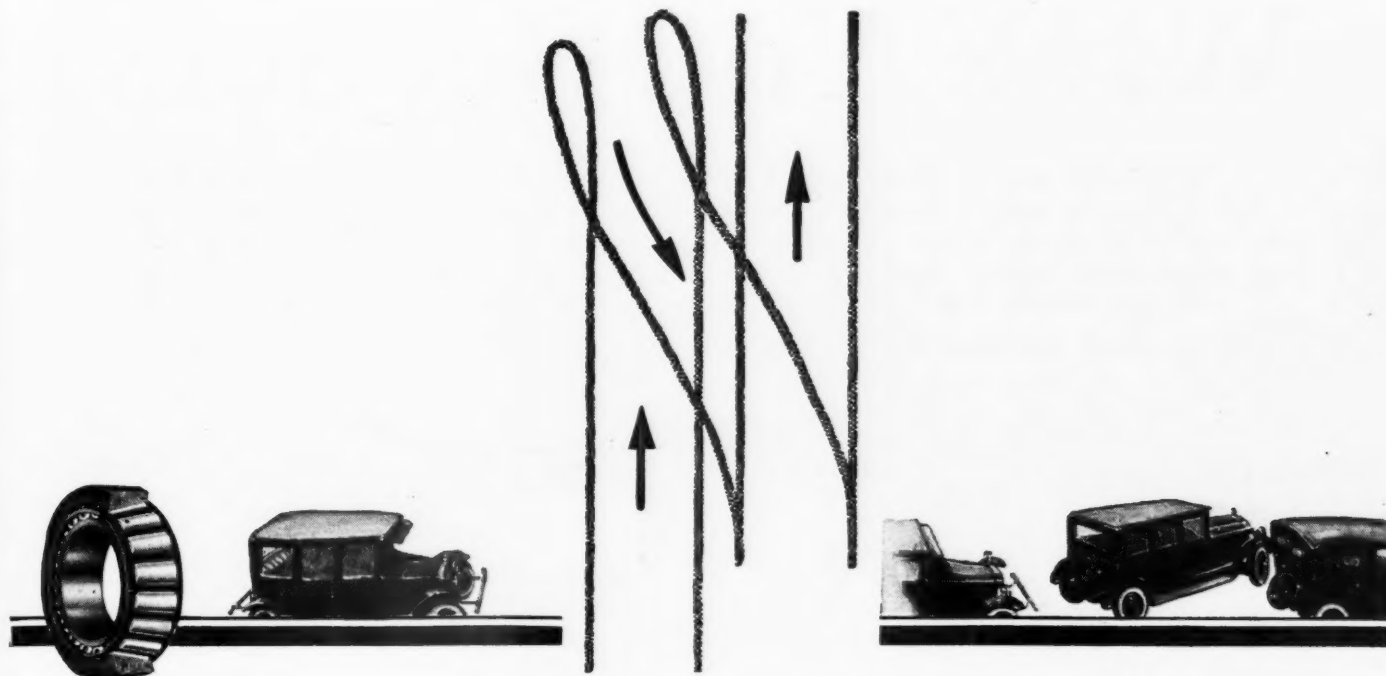
CASE
MOTOR CARS



THE SIGN OF MECHANICAL EXCELLENCE



FOR MORE THAN EIGHTY YEARS



Can They Park?

Can they easily park the cars you sell?

When—again and again—they must fully swing the front wheels of the nearly stationary car; when adhesion between tires and roadway is greatest; then the less friction in the steering pivots the better that car will be liked.

Steering pivots equipped with Timken Tapered Roller Bearings assure minimized friction always; they withstand the thrust and shock of this location; and they provide the ready adjustability for wear which keeps the steering pivot always snug-fitting and true, but easy to turn.

If traffic conditions today are to any degree a sales resistant, Timkens in the steering pivots are distinctly a sales help.

The Timken Roller Bearing Co
CANTON, OHIO

TIMKEN
Tapered
ROLLER BEARINGS



WHY You Get Service

EVER stop to think what a Drill must do in the average garage and repair shop?—honing cylinders, lapping pistons, drilling holes in all kinds of metal and wood, from a heavy truck frame to a piece of soft pine, besides miscellaneous jobs of reaming, etc. It's simple enough to get a Drill that will do the easy jobs, but it takes **QUALITY** to stand up under day-after-day hard service.

This is the

TEMCO

Model "K" 1/2 inch Heavy Duty Drill

Weight, 21 lbs. Speed, 600 R. P. M. Capacity in steel, 0 to 1/2". Not a "special" drill but a genuine Heavy Duty Tool built for continuous hard service.

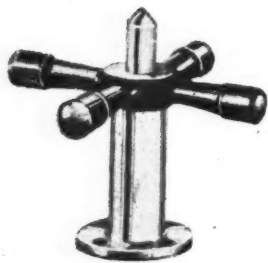


Price

Complete with Screw Feed Attachment and 15 ft. of best quality cable—

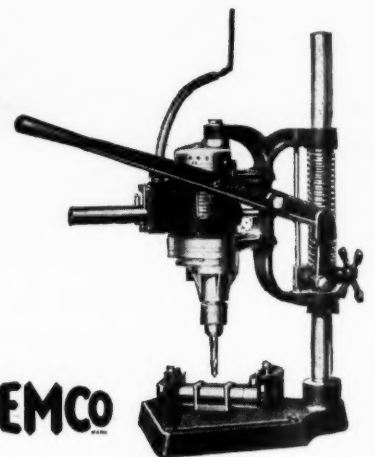
\$86⁰⁰

Any Voltage



Screw-Feed Attachment

Ordinary man-power pressure is sometimes insufficient when drilling extra-tough material. For that reason we furnish this Screw Feed Attachment as regular equipment with our Models "K" and "N" Heavy Duty Drills.



TEMCO

Bench and Post Drilling Stand

Takes Models "J," "K" and "N" drills without need of extra attachments. Drills can be quickly mounted by removing detachable side-handle, then place in position as shown. Stand is suitable for use on bench or floor, or can be mounted on post or side wall when necessary. Drill bracket can be raised and lowered, or swung to any position 'round the column. Price of Drilling Stand, \$30.00.

TEMCO

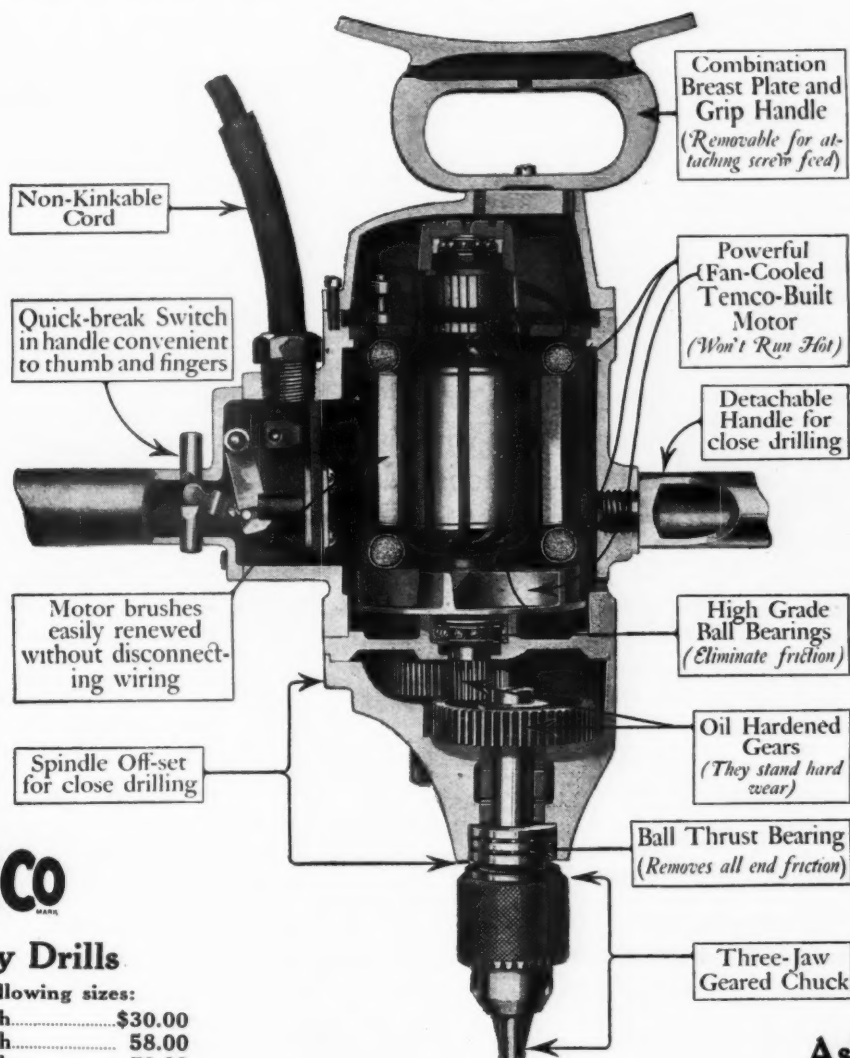
Portable Electric Tools

The Highest Grade for the Automotive Trade

The Temco Electric Motor Co. 709 Sugar St. Leipsic, Ohio

From TEMCO Tools

IT makes no difference how tough the job nor how long it lasts, you can depend upon a TEMCO Heavy Duty Drill to the very end. We put the "stuff" in them here at the factory which makes it possible for you to put them up against ALL kinds of drilling in ANY kind of material—and "they stand the gaff." The picture below explains WHY Temco Heavy Duty Drills give such dependable and continuous service.



What a User Said:

"With your Model 'K' 1/2 inch Drill I have just mounted eight hydraulic hoists and dump bodies on large trucks. This work required drilling over a thousand 1/2 inch holes through the strongest and toughest steel. Drill is also in constant use as a drill stand and does all the work that could be expected from a stationary drill of much larger power."

"H. BANKS,
"New York."

Remember this:
*You can't get
Temco Service
without Temco
Quality.*

TEMCO

Heavy Duty Drills

are made in the following sizes:

Model "D" — 1/4 inch.....	\$30.00
Model "H" — 5/16 inch.....	58.00
Model "J" — 3/8 inch.....	72.00
Model "K" — 1/2 inch.....	86.00
Model "N" — 5/8 inch.....	94.00

We also make Bench, Pedestal and Tool Post Grinders.

Ask Your Jobber

for complete information about TEMCO Tools, or write us, giving name of your Jobber.

TEMCO

Portable Electric Tools

The Highest Grade for the Automotive Trade

The Temco Electric Motor Co. 709 Sugar St. Leipsic, Ohio



REP

STEEL MILLS
USE THEM

GARDENERS
USE THEM

THEATERS
USE THEM

FEEDMEN
USE THEM

BUS LINES
USE THEM

CANNERIES
USE THEM

FARMERS
USE THEM

SHOE PLANTS
USE THEM

Jasper County has five Republic Trucks. They have given perfect satisfaction. Wouldn't buy any other—can do any kind of work in maintaining Stone Roads.—*W. S. Parks, County Highway Superintendent, Rensselaer, Ind.*

UTILITIES
USE THEM

JOBBER
USE THEM

FURRIERS
USE THEM

GROWERS
USE THEM

NURSERIES
USE THEM

SCHOOLS
USE THEM

PRINTERS
USE THEM

MAGAZINES
USE THEM

PUBLISHERS
USE THEM

CHAIN STORES
USE THEM

POTTERIES
USE THEM

PAPER MILLS
USE THEM

RANCHERS
USE THEM

RAILROADS
USE THEM

CONTRACTORS
USE THEM

BANKS
USE THEM

REPUBLIC

*yellow chassis
trucks*

Every Dealer a Transportation Counsellor

THE Republic franchise agreement is broad, straightforward and clean-cut. Every line breathes mutuality—just a big spirit of whole-hearted partnership for *going out after the business with you.*

Republic sales possibilities are as broad as all the business activity of your territory. The complete line of five models, from the Rapid Transit swift delivery Republic, to the heavy-hauling types, enables the Republic dealer to fit the truck to the business—the very basis of permanent success.

Republic service proofs are the most comprehensive in the industry, because Republic has more trucks in use than any other exclusive truck maker. Republic records, applying to all truck sizes, in all lines of industry everywhere, make the Republic dealer a transportation counsellor.

Such selling force is possible only with a truck tested by really national use, and Republic is one of the very few of these. Rarely is a leading franchise like this open. Your territory may as yet be unassigned. Why not inquire?

REPUBLIC MOTOR TRUCK CO., INC., ALMA, MICHIGAN
More Trucks in Use than any other Exclusive Truck Builder

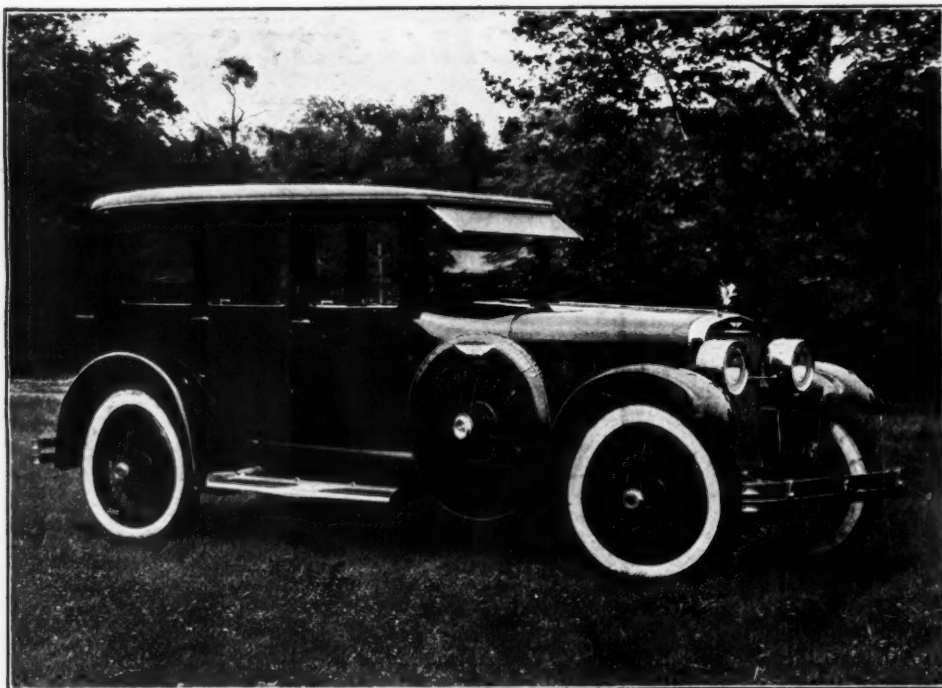
PLANTERS
USE THEM

BOILER PLANTS
USE THEM

SAWMILLS
USE THEM

REFINERIES
USE THEM

HOSPITALS
USE THEM



THE NEW H. C. S. SIX SEDAN

Minimize Your Service Problem

Talk to any mechanic who has worked on H. C. S. You will discover that H. C. S. seldom if ever presents major or complicated difficulties. Minor adjustments solve every H. C. S. service problem for years.

This car is a revelation to dealers who have sold and serviced other cars. H. C. S., itself, keeps owners sweet and friendly. The mechanical perfection of this car needs no help in convincing any driver who gets behind its wheel that it is right.

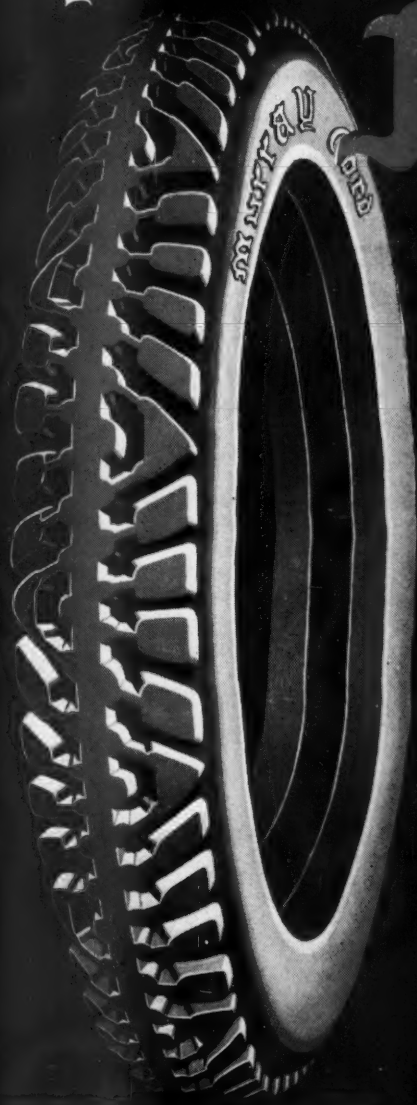
H. C. S. is most nearly the car that needs only gas, oil and water to enable it to step out and flash by the field of present day motor cars.

Come to Indianapolis. See how this superior car is built. We still have some good territory open.

H. C. S. MOTOR CAR CO., INDIANAPOLIS

Series IV: Six Touring \$2650 • Six Sedan \$3350 • Four Touring \$2250
at Indianapolis





Murray

"Not A Worry"

TIRES

FULL OVERSIZE

*The Last Step
To Prosperity*

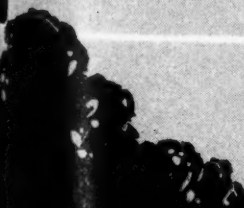
**PROVEN
QUALITY**

SATISFIED CUSTOMERS

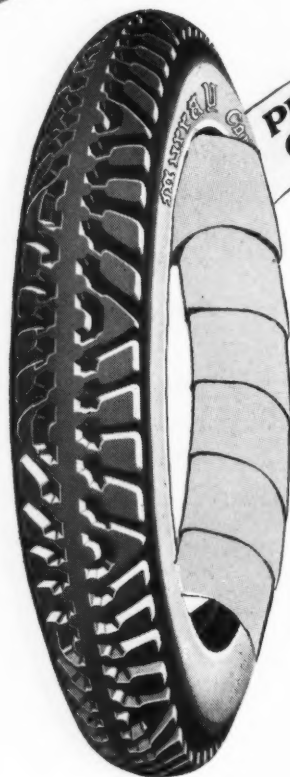
RESTRICTED COMPETITION

SOLD DIRECT FROM THE FACTORY

EXTRA PROFITS



A Proven Success!



PROVEN
QUALITY

SATISFIED
CUSTOMERS

RESTRICTED
COMPETITION

SOLD DIRECT from
the FACTORY

EXTRA
PROFITS

Murray

"Not A Worry" TIRES

FULL OVERSIZE
Cord Fabric

MURRAY TIRES have passed the first year—the dangerous age—with flying colors. It would be ungrateful indeed, if we did not at this time stop to express our appreciation for this tribute accorded by the trade and the public.

Murray Tires have been received in a manner unique in tire history.

But to us the greatest satisfaction is to be found in the already vastly increased sales reported by our dealers since the first of the year. It shows that our policy of utmost quality—at a fair price—has been crowned with success.

MURRAY

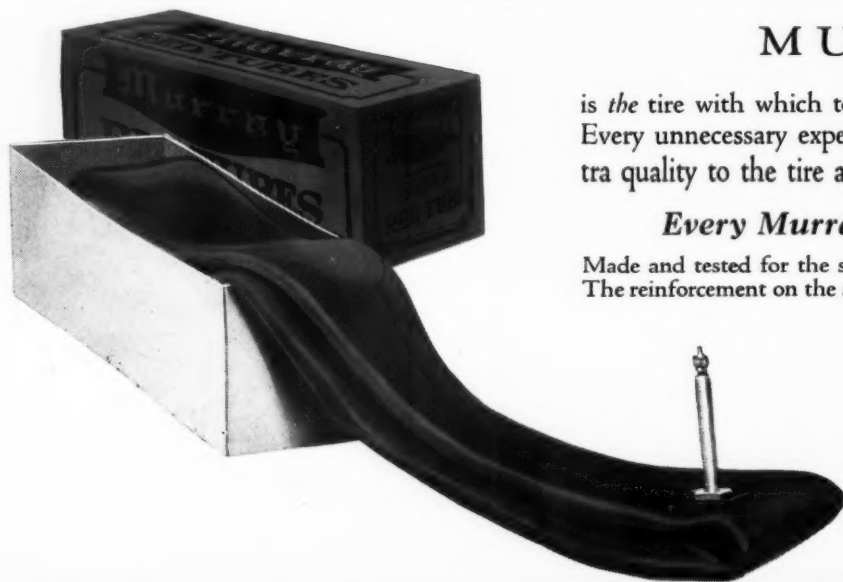
is the tire with which to meet the quality demand of 1923. Every unnecessary expense has been eliminated to give extra quality to the tire and extra profits to dealers.

Every Murray Tire a Sou'-easter

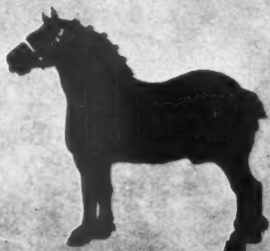
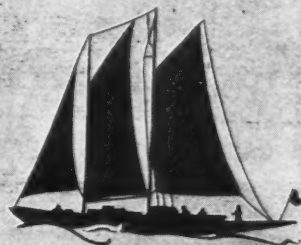
Made and tested for the southeast wheel where traffic is roughest. The reinforcement on the sidewall gives "truck-tire" strength where the strain is hardest.

Write for Our Exclusive Dealers' Proposition

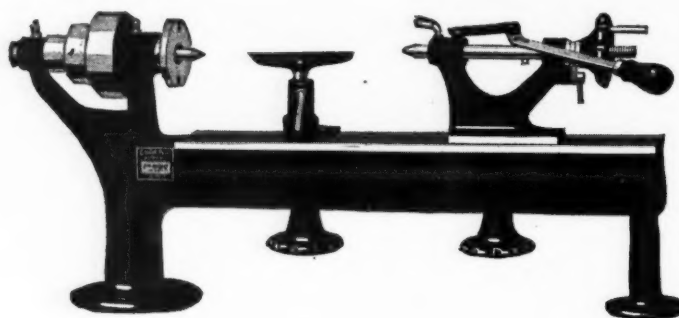
Be the sole distributor in your community for this quality, profit-bearing tire. We will be glad to discuss our distribution plan with dealers and show you how we can sell such a good tire at such a low price.



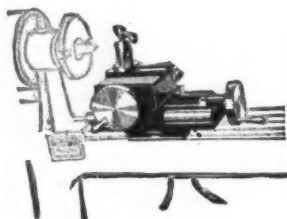
MURRAY RUBBER COMPANY, TRENTON, N.J.



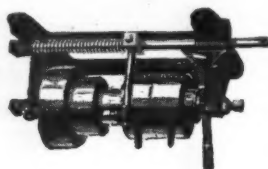
Coming!
Oct. 6th
**THE NEW
CHAMPION**
*America's
only
Versatile Car*



Bench Lathe
No. 125
Price, \$36.00



Slide Rest
No. 132
Price, \$16.00



Countershaft
No. 130
Price, \$11.00



Mr. Punch says:

"Put that bench lathe in your shop and you'll get all the repair work you want."

To help you handle more repair work

WITH a good bench lathe, any dealer, garage man, or repair man will get plenty of turning or boring jobs to keep him busy.

The Goodell-Pratt bench lathe illustrated, is a good size for motor repair work. Length over all, 25 inches. Height 11½ inches. Swing, 7 inches. Extreme distance between centers, 12 inches.

Another size, No. 494, has a larger tee rest and a longer bed, being 18 inches between centers. Length over all, 31 inches.

With every lathe is included an adjustable tee rest, a slotted face plate, a saw arbor and a drill chuck with a No. 1 Morse taper shank. The chuck holds round shanks of all sizes from 0 to ¼ inch.

Other Good Tools

If you are familiar with the Goodell-Pratt line, you know that there is a tool made for almost every conceivable kind of job.

Each of the 1500 Goodell-Pratt Tools is made for good workmen by good workmen — tool-smiths who have spent their lives in the business.

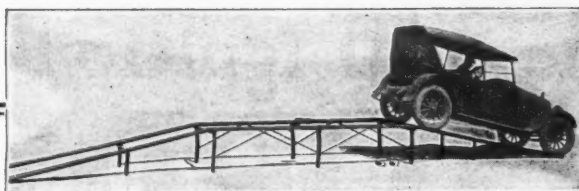
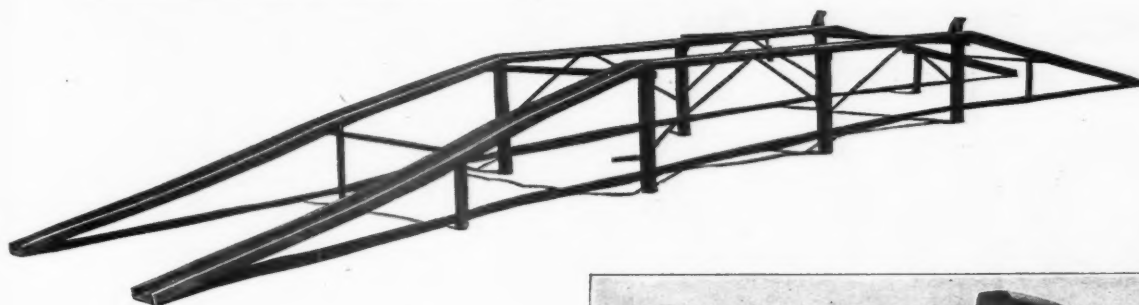
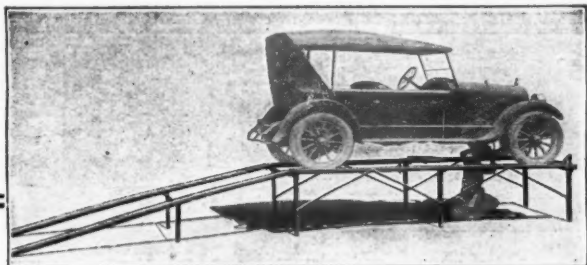
Write for Catalog No. 15. It's free.

GOODELL-PRATT COMPANY, Greenfield, Mass., U. S. A.

Toolsmiths

GOODELL-PRATT

1500 GOOD TOOLS



Just the Runway for Oil and Grease Service

A real salesman for lubricants and repair work

Free crankcase service is here to stay. The oil companies are featuring it. **IT SELLS OIL AND GREASE** for them—it will sell oils, greases, brake lining and general repairing **FOR YOU**.

Your customers will have the crankcase replenished and the entire chassis lubricated **REGULARLY** when they know you can do it for them in 15 minutes. (They neglect this when they have to leave the car until you can find time to crawl under it the old-fashioned way.)

Like **ALL** Manley equipment, this new Service Runway has a dozen points of real value. Structural steel throughout. The floor is made up of two 8" channels, 12 feet long. It is 30" high, and rests upon six 4" channels braced in a way to make it

last a lifetime. The incline tracks are also 8" channels, braced as rigidly as the floor. The grade up the incline is only 26%.

The entire Runway is built to jigs, making it easy to set up and take down. Capacity **WITH ABSOLUTE SAFETY**—10,000 lbs. No concrete foundation is necessary. It isn't even necessary to dig holes in the ground—simply sets on the ground or floor in any convenient place.

Again—crankcase service is here to stay. Don't wait until everybody but you has a runway—get a **MANLEY** now and beat the others to it. The prices are a feature—Single incline \$80, Double incline \$105. Price of incline only \$25. From your jobber or direct. Descriptive folder sent on request.

Don't Forget—



MANLEY MANUFACTURING CO. - YORK, PA.

Manley

Garage Equipment

MADE IN YORK PA.

A Landslide

Orders are pouring in
for the wonderful new
BOSCH
Type 600 Ignition
for **FORDS**

All records have been broken!

The tremendous demand for the Bosch-Ford Ignition System has astounded the dealers—

Ford owners everywhere are having their cars equipped with Type 600, the big, dependable ignition system made by the manufacturers of the world famous Bosch Magneto.

There will be hundreds sold in your community this fall—**some** dealer is going to make big money!

Get the jump on the others—Wire TODAY for full particulars and a sample fitting C.O.D.

American Bosch Magneto Corporation

Main Office and Works: Springfield, Mass.

Branches: New York, Chicago, Detroit, San Francisco



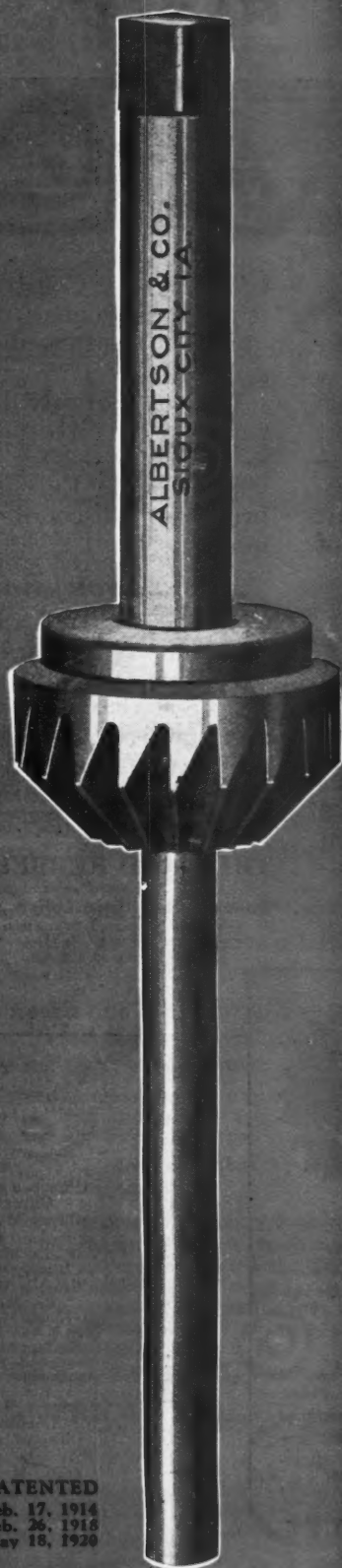
What it Does

- 1—Makes Easy Starting.
- 2—Keeps Plugs Clean.
- 3—Prevents "Bucking."
- 4—Gives More Power.
- 5—Saves Gas and Repair Bills.
- 6—Stops Timer Troubles.
- 7—Pays for Itself.
- 8—Prevents Short Circuits.
- 9—Cuts Down Vibration.
- 10—Eliminates Spark Lever.



Your 1923 Opportunity

SIoux VALVE SEAT REAMER



PATENTED
Feb. 17, 1914
Feb. 26, 1918
May 18, 1920

Does Your Shop Toe the Mark?

UNLESS it is equipped with tools that insure efficiency, accuracy and speed you cannot expect it to increase your profits and reduce your overhead.

"Sioux" Tools mean more and better work at smaller cost.

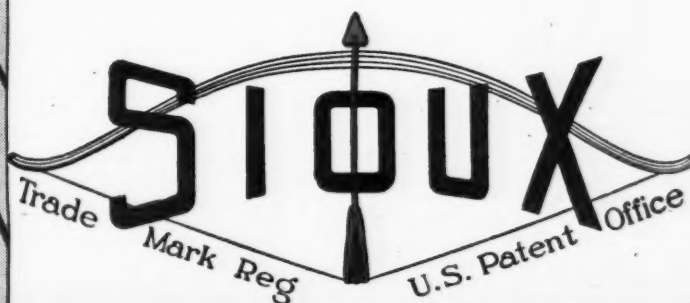
You can save hours of tiresome valve grinding by removing the carbon pits and other irregularities from valve seats with this rapid cutting and absolutely accurate Sioux Reamer. There's a Sioux Valve Seat Reamer for every engine made.

No Chattering of valve seat. By inserting a piece of 50 lb. wrapping paper, large enough to cover valve seat, on the pilot stem between reamer and valve seat you avoid all possibility of chattering. A few turns will cut through paper. Write for free sample.

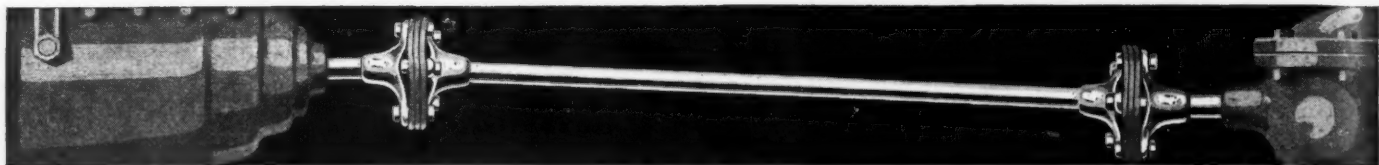
Your Jobber Sells Them

Write for Catalog and Valve Seat Reamer Specifications
ALBERTSON & CO., SIOUX CITY, IOWA

*"The Well Equipped Shop
Gets the Business"*



Straight line power— from engine to rear axle



How the fanwise construction delivers it without jolts, jars or vibration

THERE is no longer any reason for a shaft being out of true several times per revolution. Delicate gears and bearings in the transmission and rear axle can now be cushioned and protected from unnecessary vibration.

The fabric disc of Fanwise Construction eliminates the jars and jolts of the racking metal universals—it holds the propeller shaft true because it balances every stress.

Notice below the patented Thermoid-Hardy Fanwise Construction. The strands of each layer of fabric run in a different direction. Strain it from any angle—each sector is of equal strength and flexibility. This means

the end of vibration—it eliminates “whipping.”

The diagram at the left (illustration below) shows an ordinary disc, its layers of fabric laid parallel. Note that the left hand bolt is the *only* one that can pull *with* the cotton strands—the other two pull *across*, stretching the disc out of true and causing vibration of the entire shaft.

Cushions every shock—needs no adjustment

The Thermoid-Hardy disc has remarkable elasticity. Added to this is a ruggedness which withstands the jarring blows of the roughest roads. The Thermoid-Hardy Joint is good for over 60,000 miles on the heaviest trucks—without lubrication or adjustment!

The Fanwise Construction keeps it going long after the ordinary universal has racked or pulled itself apart.

Thermoid-Hardy discs are now packaged for distribution through jobbers and dealers for replacement sales. Full information, prices, and discounts sent on request.

A book you should have

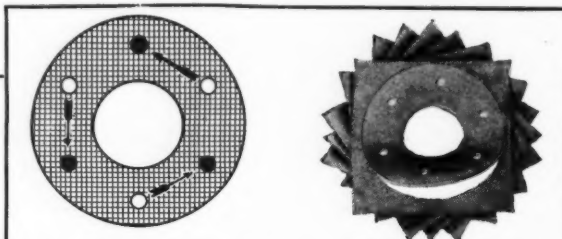
We have prepared a book, “Universal Joints—Their Use and Misuse,” that treats the subject from every angle—the mechanical principles, construction, lubrication, manufacture, strength, tests, and records of performance. Send for your copy today.

THERMOID RUBBER COMPANY

Sole American Manufacturers

Factory and Main Offices, Trenton, N. J.

New York, Chicago, Los Angeles, Atlanta, Detroit, Seattle, Kansas City, Boston, Cleveland, San Francisco, London, Paris, Turin.



At left is an ordinary fabric disc, its layers of fabric laid parallel. The three black holes are the driving bolts—the three white ones the driven. Note that the left hand driving bolt is the *only* one that can pull in the direction of the cotton strands. The other two must pull on a bias. This stretches the whole disc out of true, causing vibration and “whipping” of the shaft.

Now examine the Thermoid-Hardy patented Fanwise Construction. The disc is built up with the strands of each fabric layer running in a different direction. Each sector is equally strong, equally elastic. Every stress is balanced—the torsional, the centrifugal, and the lateral. This eliminates vibration and holds the shaft in true on every revolution.

LIST OF USERS

Allis Chalmers Mfg. Co.
The Autocar Co.
Available Truck Co.
Barley Motor Car Co. (Roamer)
Chandler Motor Car Co.
Crow-Elkhart Motor Corp.
Jas. Cunningham Son & Co.
Dart Truck & Tractor Corp.
The Dauch Mfg. Co.
Diamond T Motor Car Co.
Doane Motor Truck Co.
Fageol Motors Co.
H. H. Franklin Mfg. Co.
Garford Motor Truck Co.
Gramm-Bernstein Motor Truck Co.
Hawkeye Truck Co.
Hendrickson Motor Truck Co.
Highway Motors Co.
Holt Mfg. Co.
Indiana Truck Co.
International Harvester Co. of A. Inc.
International Motor Co.
Jackson Motors Corp.
Kelsey Motor Co.
Kentucky Wagon Mfg. Co., Inc.
King Zeittler Co.
Lakewood Eng. Co.
Lexington Motor Co.
Locomobile Co.
Maxwell Motors Corp.
Menominee Motor Truck Co.
Mercer Motors Co.
Moreland Motor Truck Co.
Nelson & LeMoon

LIST OF USERS

E. A. Nelson Automobile Co.
Nelson Motor Truck Co.
D. A. Newcomer Co.
O'Connell Motor Truck Co.
Oliver Tractor Co.
Oneida Motor Truck Co.
Packard Motor Car Co.
Parker Motor Truck Co.
Patriot Motors Co.
Reliance Motor Truck Co.
Reo Motor Car Co.
Reynolds Motor Truck Co.
Root & Van Dervoort Eng. Co.
Sanford Motor Truck Co.
Southwark Fdy. & Mach. Co.
Stoughton Wagon Co.
Studebaker Corp.
Stutes Mar Tractor Co.
Templar Motors Co.
Tioga Steel & Iron Co.
Towmotor Co.
Traffic Motor Truck Corp.
Transport Truck Co.
Twin City Four Wheel Drive Co., Inc.
United Motors Co.
Walter Motor Truck Co.
Ward La France Truck Corp., Inc.
Geo. D. Whitecomb Co.
Wichita Motors Co.
H. E. Wilcox Motor Co.
Willys-Overland, Inc.
Zeittler & Lamson
Truck & Tractor Co.

THERMOID-HARDY UNIVERSAL JOINT

Makers of “Thermoid Hydraulic Compressed Brake Lining” and “Thermoid Crolide Compound Tires”



Why Joe Didn't Think Much of Our Guarantee

ONE of our salesmen tells this story on himself, so it must be true. He was new on the job then and he undertook to talk Testbestos to Joe S—, who runs a garage in a little town in West Virginia. He didn't know Joe was the champion long-distance kidder of Tyler County.

"Don't tell me about that Testbestos guarantee. It's no good to me," says Joe.

"What do you mean no good?" asks the salesman.

"Suppose," says Joe, "I have a lot o' tires and nobody ever calls for 'em. They ain't much good to me, are they?"

"Well," says Joe, "I reckon I've put about a million feet of Testbestos on cars around here, and I haven't had a call to make good on that guarantee yet."

The Testbestos Guarantee is not intended for our old friends like Joe S—. They *know* Testbestos. They buy Testbestos because they know it makes a good job and a satisfied customer.

We make the Guarantee so that if you have never tried Testbestos you can try it at *our* risk—not yours.

Just between ourselves—we guarantee our product because we know we won't have to come across once in a coon's age. If we had to "make good" very often we could never afford to use the highest quality of long-fibred asbestos, the best of fine brass wire, and treat every foot of Testbestos by an expensive special process to raise its resistance to friction, heat, gas and oil. We could never make Testbestos as good as it is and still meet the competition of more cheaply made linings.

If you don't know who is the nearest Testbestos jobber, write us.

AMERICAN ASBESTOS CO., Norristown, Pa.

THE TESTBESTOS GUARANTEE

If any piece of Testbestos Brake Lining fails to give absolutely satisfactory service, return it to us and we will send you a new piece without charge.

**BRAKE INSPECTION—
—YOUR PROTECTION**

REG. U.S. PAT. OFF.
TESTBESTOS
AUTOMOBILE
BRAKE LINING



AMERICAN ASBESTOS CO.
Norristown, Pa.

Please send me the name of the nearest TESTBESTOS jobber.

Name

Address

"What Car Do You Drive?" Makes You a Socket Wrench Expert

The Snap-on book, "What Car Do You Drive?" tells you instantly what combination of Snap-on handles and sockets to select for almost any standard make of car. You don't have to know a thing about any car to give motorists a correct Snap-on Kit—just get the name of the car and consult the book.



CHEVROLET

The following applications of the Snap-On Wrench Kit for Chevrolet cars include the most common points at which repairing or adjusting is done. Just as you will find Snap-Ons used in these places, so will you find them better tools to work with in doing the heavier maintenance repairing on your car.

Part	Set Size	Set No.	Handle	Attachments
Carburetor Intake	"	160	Offset	10" Ex. Bar
Connecting Rod	"	160	Offset	"
Cylinder Head	"	180	Slidg. T.	"
Demountable Rim	"	180	Offset	"
Differential Housing	"	200	Offset	"
Exhaust Manifold	"	180	Long T.	"
Fender to Frame	"	180	Long T.	"
Oil Pan	"	160	Offset	"
Spring Clips	"	180	Long T.	"
Transmission Cover	"	180	Offset	"
Water Cylinder Inlet	"	160	Slidg. T.	"
Intake Manifold	"	160	Offset	"
Exhaust Manifold	"	310	Long T.	"
Timing Gear	"	160	Slidg. T.	"
Water Pump Brackets Nut	"	160	Offset	"
Oil Pump	"	300 1/2	Long T.	"
Motor Support	"	200	Slidg. T.	"
Radiator Support	"	240	Slidg. T.	"
Steering Gear Support	"	180	Offset	"
Generator Motor Support	"	200	Offset	"
Demountable Rim	"	180	Long T.	"
Head Lamp Bracket	"	200	Offset	"
Spring Support Rear Axle	"	200	Offset	"

Summary of "Set" Units

Unit	Price
No. 160 Socket	\$.30
No. 180 " "	.30
No. 200 " "	.30
No. 240 " "	.30
No. 260 " "	.40
No. 1 Offset Handle	.80
No. 3 Long Tee Handle	1.00
S-5 Sliding Tee Handle	.60
S-12 10" Extension Bar	.60
Price for Snap-On Set for Chevrolet Car (without No. 5 Rim Brace Handle)	\$5.00
Price, Complete, with No. 5 Rim Brace Handle	\$6.50

MAXWELL

The following applications of the Snap-On Wrench Kit for Maxwell cars include the most common points at which repairing or adjusting is done. Just as you will find Snap-Ons used in these places, so will you find them better tools to work with in doing the heavier maintenance repairing on your car.

Part	Set Size	Set No.	Handle	Attachments
Clutch Housing	"	180	Offset	10" Ex. Bar
Connecting Rod	"	200	Slidg. T.	"
Cylinder Head	"	240	Offset	"
Main Bearings	"	160	Slidg. T.	"
Differential Housing	"	160	Long T.	"
Fender to Frame	"	180	Long T.	"
Oil Pan	"	160	Offset	"
Spring Clips	"	180	Long T.	"
Transmission Cover	"	180	Offset	"
Water Cylinder Inlet	"	160	Slidg. T.	"
Intake Manifold	"	160	Offset	"
Exhaust Manifold	"	310	Long T.	"
Timing Gear	"	160	Slidg. T.	"
Water Pump Brackets Nut	"	160	Offset	"
Oil Pump	"	300 1/2	Long T.	"
Motor Support	"	200	Slidg. T.	"
Radiator Support	"	240	Slidg. T.	"
Steering Gear Support	"	180	Offset	"
Generator Motor Support	"	200	Offset	"
Demountable Rim	"	180	Long T.	"
Head Lamp Bracket	"	200	Offset	"
Spring Support Rear Axle	"	200	Offset	"

Summary of "Set" Units

Unit	Price
No. 160 Socket	\$.30
No. 180 " "	.30
No. 190 " "	.30
No. 200 " "	.30
No. 240 " "	.40
No. 300 1/2 " "	.50
No. 310 " "	.80
No. 1 Offset Handle	1.00
No. 3 Long Tee Handle	1.35
S-5 Sliding Tee Handle	.60
S-12 10" Extension Bar	.60
Price for Snap-On Set for Maxwell Cars (w/ h. out No. 5 Rim Brace Handle)	\$6.95
Price, Complete, with No. 5 Rim Brace Handle	\$8.45

A Selected Kit for Every Car

The Snap-on Leatherette Kit Bag makes an instant hit with the motorist. It's handy and flat—fits nicely under the seat—and takes his mind off wrench problems forever.

"The Greatest Service With the Fewest Tools"

MOTOR TOOL SPECIALTY COMPANY
14 E. JACKSON BLVD. CHICAGO, ILL.

Snap-on

INTERCHANGEABLE
Socket Wrenches

Results vs. Ruts

*Now Wood-frame or All-steel Bodies Take 400°
Baked Permanent Enamel Finish in 7½ hours
at One-third the cost of Paint and Varnish*

STRANGE how hard it is for some people to throw off tradition and accept new facts.

Well-known cars of wood-frame construction have been in heavy production under the Oxvar Method for periods up to three years.

Certainly there is no mystery about the Oxvar Method. The wood frames are processed, so well protected, in fact, that the moisture content is constant throughout the car's life — and the breaking strength of the wood is actually increased.

Not only does this processing permit 400°

Baking of the body metal but eliminates body squeak and warping.

Furthermore, by the Oxvar Method, five coats of permanently brilliant enamel can be baked on at 400° and delivered for trimming in seven and one-half hours, at one-third the cost of older methods.

To the Factory Executive, to the Dealer, we say, "It is no longer necessary to pay tribute to old faiths or be limited by old ruts."

A booklet describing Oxvar (for production of twenty-five bodies or more daily) will be mailed on request.




OXVAR

OXFORD VARNISH CORPORATION

Main Office: Empire Building, Detroit

Plant: Toledo, Ohio

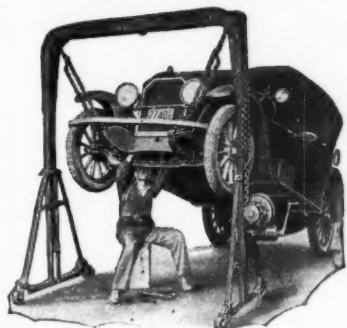
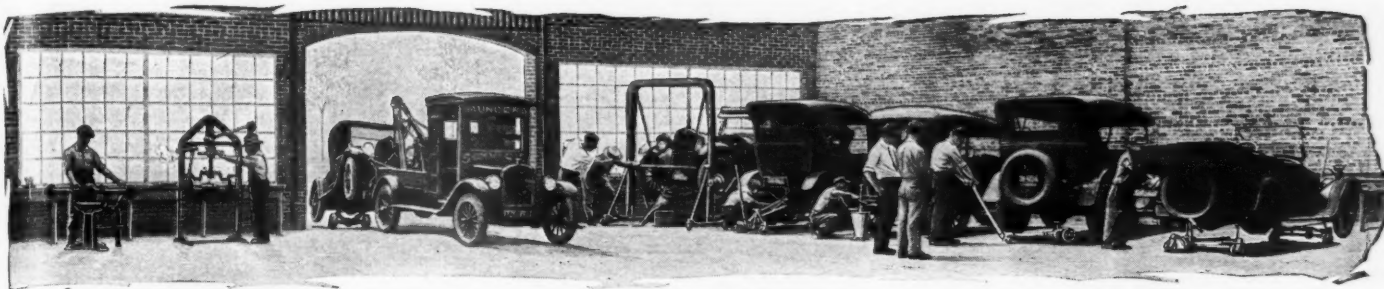
"Eaton" means Excellence

T is generally recognized that Eaton is a synonym for excellence in axles. This is natural, considering the character of the cars and trucks that use them, and the freedom from axle trouble that characterizes these vehicles. If you could come and see us build axles, you would carry away the conviction that no safer foundation could be laid for your car or truck than with these Eaton-built units.

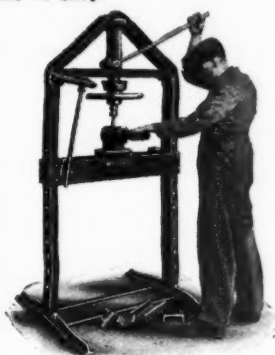
The EATON AXLE & SPRING COMPANY
CLEVELAND

EATON
AXLES

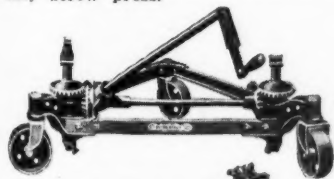
An EATON  PRODUCT



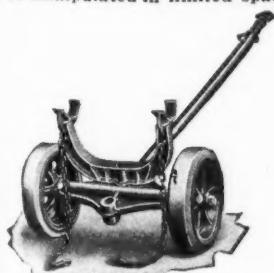
Weaver Auto Hoist
Meets every requirement of hoisting service inside and outside of shop.



Weaver Hi-Speed Press
The most efficient garage press on the market, combining in one press the advantages of a speedy rack and pinion press and a heavy duty screw press.



Weaver Auto Twin-Jacks
Designed to support and transport complete and dismantled cars in the repair shop, washroom and sales room and enable them to be manipulated in limited space.



Weaver Auto Ambulance
Indispensable for handling towing work quickly and economically. Can be readily attached to either axle.

**Double profits
on winter overhauling**
with this

WEAVER Equipment

EVERY car in your vicinity is going to need repairs after months of hard service this summer. This winter overhauling work will prove a gold mine for you---if you put the essential Weaver equipment shown on this page to work for you now.

With this Weaver equipment you will net a far bigger profit on each individual job, because it will enable your mechanics to turn out much more work in less time. And, what is even more important, the better quality of your work will attract new customers that are the life blood of any business that wishes to forge ahead.

Better place your order for this equipment now, so you will have it ready for the rush of repair work that will start in the next few weeks.

Weaver Equipment is sold by leading jobbers everywhere.

Your jobber's salesman will be glad to give you any further information you may desire, without obligating you in any way. If your jobber does not handle the Weaver line, write us direct.

WEAVER MANUFACTURING CO.
Springfield, Illinois, U. S. A.

Weaver Canadian Co. Ltd., Chatham, Ontario

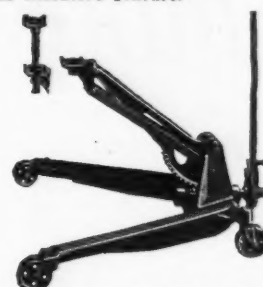


**Weaver
Auto Crane**

A big money-maker, because it enables you to bring profitable repair jobs right into your shop. Compound gear construction gives two distinct leverages for quick adjustment of chain to load and for elevating heavy loads. Adjustable boom. Chain or cable furnished.



Weaver New-Way Jack
The ideal all-around quick acting jack for garages and repair shops. Wheels are pivoted by twisting handle, enabling you to accurately guide jack under car---an exclusive feature.



Weaver Hi-Lift Jack
Supplies an exceptional range of lift---from 7 to 45 inches---useful in handling countless jobs that come into the repair shop daily. Worm drive insures safety.

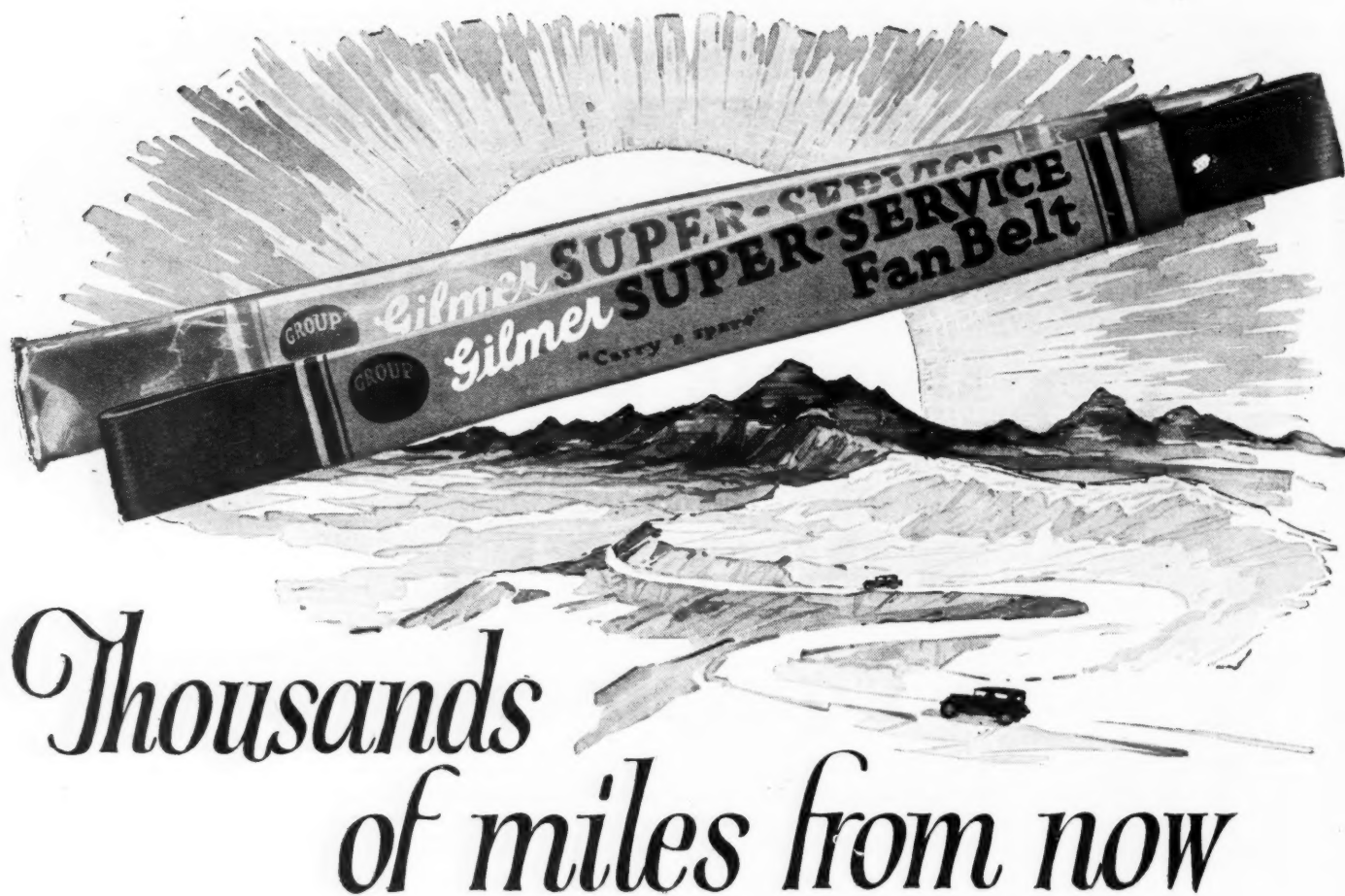


Weaver Axle Stand
Saves time and labor in repairing any type of passenger car axle, as it holds axle in most convenient position for workman. Extremely simple in design and operation.

**Weaver
Bucket
Pump**

A time and labor saver in filling and cleaning differentials and transmissions. Cylinder can be sucked full of different lubricant from that in bucket without disturbing contents of Bucket.





THE requirements of a good fan belt are three. First, it must be tough—of great tensile strength. Second, it must be pliable, easy running. Third, a good fan belt must be able to resist the destructive effects of heat, oil and water.

Super-Service is a fan belt which best meets these requirements. Exhaustive tests in the factory and on the road have proved it to be tougher and longer wearing. Super-Service is a cord belt. It is pliable and smooth running. It has a metallic finish which gives it greater resistance to heat, oil and water.

But that isn't all. Not content with an engineering achievement, the Gilmer Company has accomplished a merchandising achievement. Realizing that no man-made product is absolutely indestructible, they wrap Super-Service Fan Belts in pairs.

Sell your customer the twin package—two belts instead of one. Put one on his fan and the "spare" in his tool-box for an emergency. Thousands of miles from now, the first belt will some day need replacement. At such a time the "spare" in the tool-box comes into its own.

Your nearest jobber handles Gilmer Super-Service Fan Belts. Write to him to-day for prices and complete information.

L. H. GILMER CO.
Philadelphia



"It's a Gilmer Product—
you can depend on it."
—Happy Van,
the Gilmer Man.

Gilmer
SUPER-SERVICE
FAN BELT



**This attractive cabinet
is Free**

This handsome metal display counter cabinet will be furnished free to every dealer stocking an assortment of Gilmer Super-Service Fan Belts. This cabinet is the newest of Gilmer merchandisers. It reminds your customer of Gilmer dependability and "asks 'em to buy." It provides a much more convenient way of selling Super-Service Fan Belts.

Something for the Car for Christmas



MONOGRAM *The* **ORIGINAL** Self Locking Radiator Cap *The Beautiful Gift*

Why do we give Christmas presents? To give our friends pleasure, of course. When Lowell wrote "A thing of beauty is a joy forever" he was unknowingly writing of the pleasure a car-owner gets from having a Monogram Cap on his radiator.

For Monogram Cap is truly beautiful. Artists designed it. The relation of the smaller parts to the central mass is correct. Each curve and line is in due proportion to the others. The shield is modeled after the best designs of the middle ages, when armourers were also artists. The finish is the best modern science provides.

To bring the beauty of Monogram Cap to the attention of the Christmas buyer we are preparing holiday sales-helpers even better than the very successful ones of last year. Any Monogram salesman or service inspector can tell you all about them. Or you can learn the plan by writing us. The sooner the better, for an early start assures bigger profits.

GENERAL AUTOMOTIVE CORPORATION
600 West Jackson Boulevard
Chicago, Illinois



We Can Market a New Accessory

An accessory manufacturing company in the middle west, an unquestioned leader in the sales of its product, seeks one or more additional articles to manufacture and sell nationally.

This company has one of the finest distributing organizations to be found. It is doing business with the leading jobbers of the country. It is in position to take over, if possible, a non-competitive accessory for both manufacture and sale.

This is an opportunity for some company or individual which has not been able to bring its production into volume either thru the lack of facilities or finances.

Articles desired should lend themselves to jobbing distribution and must be of proved value from the standpoint of attraction or performance or both.

Frank correspondence is invited which should set forth briefly but clearly the article and the claims made for it. The first letter should tell us as much about the article as possible. All information will be considered confidential.

Box E - 6084, c/o Motor Age,
5 So. Wabash Ave., Chicago, Ill.

Warford makes a Ford DO any full-size 2-ton job. Warford plus Ford COSTS a mere fraction of the price of any comparable hauling unit. Warford makes 2-ton COST PER MILE lowest in truck history. Warford six speeds forward include UNDERDRIVE for super-pull and OVERDRIVE for

economical high speed. Selective type, Timken bearings, 3½% nickel gears, vanadium shafts, aluminum case, give Warford highest quality. Warford opens the whole 2-ton market to dealers. Write to us. The Warford Corporation, 44 Whitehall Street, New York City.

AUBURN, N. Y.
Foster-Warford Co.

CANTON, Ohio
Dine-De Wees Company
400 Walnut Ave., S. E.

DALLAS
Houdaille-Polk Co.
2218 Commerce St.

DAVENPORT, Iowa
Sieg Company

DENVER, Motor
Specialties Company
17 W. 13th Avenue

MEMPHIS
Continental Body Co.
476 Union Ave.

MINNEAPOLIS
McGee White Corporation
1311 Hennepin Ave.

NEW YORK
Motive Parts Corporation
796 10th Ave.

SAN FRANCISCO
Warford-Pacific Co.
1111 Post Street

STOCKBRIDGE, Mich.
Transmission Sales Co.

VANCOUVER, B. C.
E. W. Jay

WICHITA, Kans.
Price Auto Service Co.
301 S. Topeka Ave.



Warford
AUXILIARY TRANSMISSION

1240 MILES of Kawneer



The Kawneer Company of Niles, Michigan points with pride to more than 260,000 installations of its resilient, solid copper store front construction.

These Kawneer Store Fronts placed side by side, would reach from Key West to beyond Chicago—more than 1,240 miles.

This excellent record of Kawneer resilient construction is offered as our bid for your confidence in—

Kawneer
SOLID COPPER
STORE FRONTS

The Kawneer Company,
2719 Front Street
Niles, Michigan

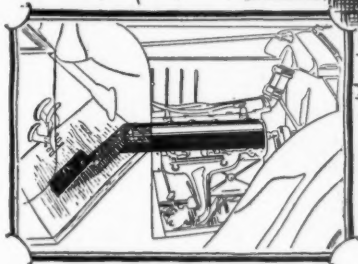
Without obligation please send me your
Book of Designs of Kawneer Store Fronts.

Name

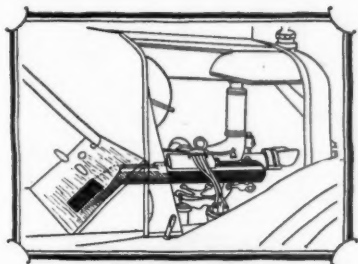
Address

Stock Kingston Heaters Now!

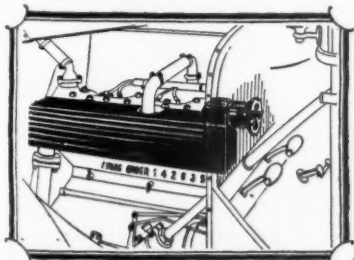
A STEWART KIMHOFF



Ford
\$3.75



Overland
\$5.00



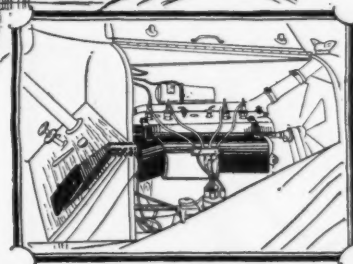
Studebaker
\$7.50

KINGSTON CAR HEATERS are going big this season. The new line embraces models for the six quantity production cars of the world. The demand will be large and will come early. Dealers should stock this splendid, fast-selling line at once.

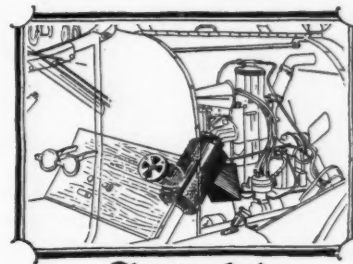
The Kingston Heater line this year has the backing of the most vigorous consumer advertising campaign in the Heater's history. The Saturday Evening Post will be used throughout the fall and winter months. In addition we are heavily circularizing the trade and are telling all of the people where the Kingston may be had.

The Kingston line is exceptionally handsome. Always a good seller, this year will break all records. Order early, and be sure to get your share of the window and counter displays, folders, etc.

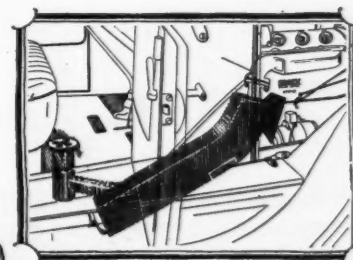
Remember, there is a splendid dealer margin in handling this high-class line. Stock early, and get the cream of the demand.



Dodge
\$5.00



Chevrolet
\$7.50

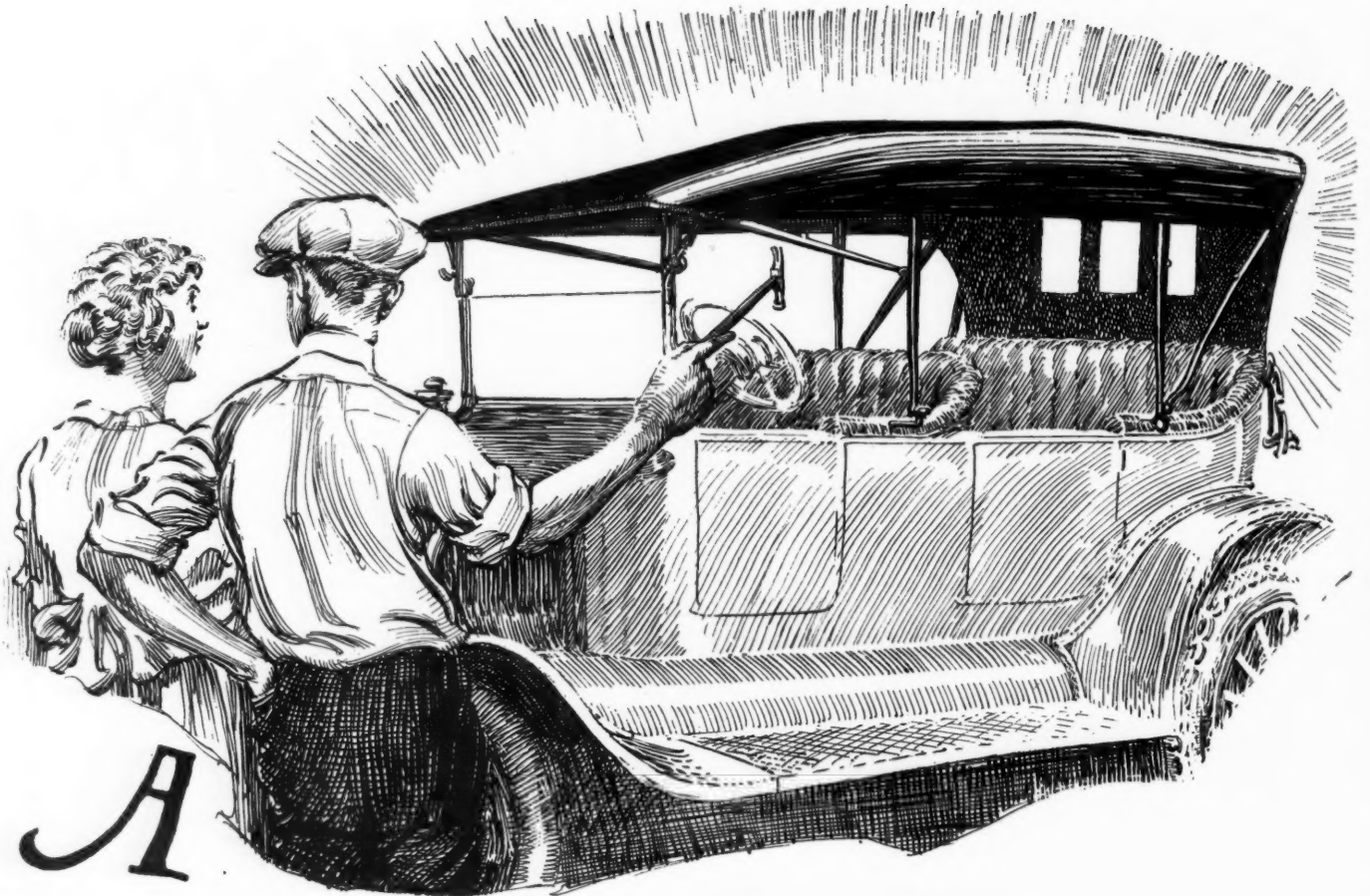


Essex
\$7.50

Kokomo Electric Company
Kokomo, Indiana

KINGSTON

CAR HEATERS



A New Ford in 30 Minutes

Just like dressing a man up in his Sunday clothes—a new Rose Top makes a Ford look like a million dollars. The cost is next to nothing compared to the result. He can put it on by himself in 30 minutes. Comes tailored to fit. Rip off the old top and tack down the new one.

This is something the Ford owner will buy. (He is proud as a peacock, even if his purse is lean.) The Rose Top, at \$9.00, fits both his pride and his purse.

There's profit in Rose Tops. Ask your jobber to show you the line.

Cost but
\$9⁰⁰

FRANK ROSE MFG. CO., Hastings, Nebr.

ROSE TOPS for FORDS

PYRO-ALCOHOL RADIOMETER

No Excuse for Frozen Radiators

Radiators can't freeze if there is sufficient alcohol in the water to meet temperature conditions. The average motorist knows little or nothing about the amount of alcohol in his radiator because alcohol will boil off without motor meter indicating a boiling motor.

Without a PYRO ALCOHOL RADIOMETER, the motorist is never sure of the strength of his solution and a frozen radiator is the result.

The SCRANTON PYRO ALCOHOL RADIOMETER registers the degree of temperature at which the solution will freeze—according to the amount of alcohol in the radiator.

Simple, convenient, and easy to use it is a necessity to every winter driver. It is positive insurance against frozen radiators and will pay for itself many times over in alcohol saved.

Improved barrel with large rubber bumpers top and bottom—extra large rubber bulb—and square rubber collar are features that make it a fast seller.

Scranton's method of laboratory testing insures float accuracy.

Get ready for Winter profits now. Get your stock from any good jobber.

LIST PRICE \$1.

Scranton Glass Instrument Co.
SCRANTON, PA.

JOBBER'S

Our Catalogue No. 50, just off the press, is complete on the subject of battery and radiator testers. Lists 9 different types and sizes, including 6 distinctly new types. Sent to any good jobber on request.





Berkshire Electric Windshield Wiper

Not a luxury but an actual necessity. Designed by Automotive Engineers and built by Electrical Specialists. Two years spent in its development. Thousands in service. Will operate at regular speed regardless of the speed of the motor. Rugged, Silent, Economical and Efficient.

Is furnished with or without mirror. Weighs less than two pounds and requires less than four amperes to operate.

Retail price, Wiper, \$9.50; Mirror, \$2.50.

Berkshire—J & B TIMER for the FORD CAR or TRUCK

The Old Reliable J & B Timer. A standard for years. Known to the discriminating Ford-owner and the progressive Dealer as being *long-lived, dependable and efficient*. It is built by Ignition specialists and is designed to synchronize with the motor in the Ford Car, Truck or Tractor. Rugged and fool-proof. Guaranteed to fit, to serve and to satisfy. The Lowest-Priced High-Grade Timer Built. Retail for \$1.50



Berkshire Super-Coil for Replacements

The Berkshire Super-Coil is interchangeable with every make of battery ignition coil. With its detachable resistance elements and condenser and three simple bases any car can be fitted by the most inexperienced mechanic. No necessity for tying up a lot of capital in slowly moving stock—an investment of less than \$8.00 puts you in position to make any coil replacement on any car using battery ignition.

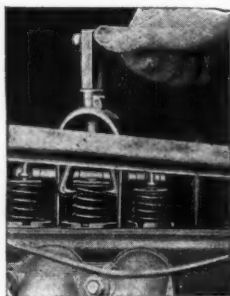
Get a **UNIVERSALLY INTERCHANGEABLE Service Station Set** from your Jobber

BERKSHIRE—J & B TOOLS



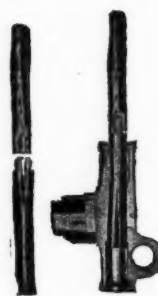
The Berkshire—J & B Buick Rocker Arm Lifter

A time, temper and money saver. Indispensable to the shop repairing Buick Cars. It lifts the Rocker arm clear of the ball end of the push rod. This allows the push rod to be sprung out of place, after which the Rocker Arm can be revolved on its axis away from the valve stem, giving free access to the valve cage spring and stem. Simple, durable and practical. Made of Alloy Steel, Drop-Forged. Rust-proofed. Retail Price, \$2.00.



The Berkshire — J & B Buick Valve Cage Remover

Gain access to the inside of the Buick Motor. The Valve Cage Remover comes into action after the Rocker Arm is free from the Valve Stem. The Valve Cage Remover grasps the two top coils of the Valve Cage Assembly Spring and gradually draws the valve cage clear without bending the Valve Stem. Both the Valve Cage Remover and the Rocker Arm Lifter can be used without disturbing the water pipe connections or any adjacent parts. Made of Alloy-Steel, Drop-forged. Rust-proofed. Retail price...\$5.00



The Berkshire — J & B Bushing Remover

Every Repairman has experienced difficulty in removing stubborn bushings, particularly those in the Spindle Body of the Ford. This Bushing Remover is the solution. Quickly removes any bushing of half-inch diameter. A necessity in every Garage and Repair Shop. Thousands in daily use. Drop Forged from Alloy Steel. Rust-proofed. Retail Price.....\$1.00



The Berkshire — J & B Buick Wheel Puller

Meets the difficult problem of removing wheels from full-floating rear axles. Designed by an expert on wheels and axles. Easily operated and pays its first cost in a day's time. Remove the flange nuts, driving flange and axle—place the wheel puller over two directly opposite bolts, use two of the flange nuts to hold it. Turn the central screw with a wrench until the plate is in contact with the axle tube—the wheel comes off squarely. Made of alloy steel, drop forged. Screw is of selected machine steel. The whole is rust-proofed. Retail Price\$3.50

Manufactured by
BERKSHIRE PRODUCTS CORPORATION
Successors to - J & B Manufacturing Co. Berkshire Magneto Co.
"Automotive Equipment Manufacturers for Almost a Quarter Century."
PITTSFIELD, MASSACHUSETTS U. S. A.

A lesson in history



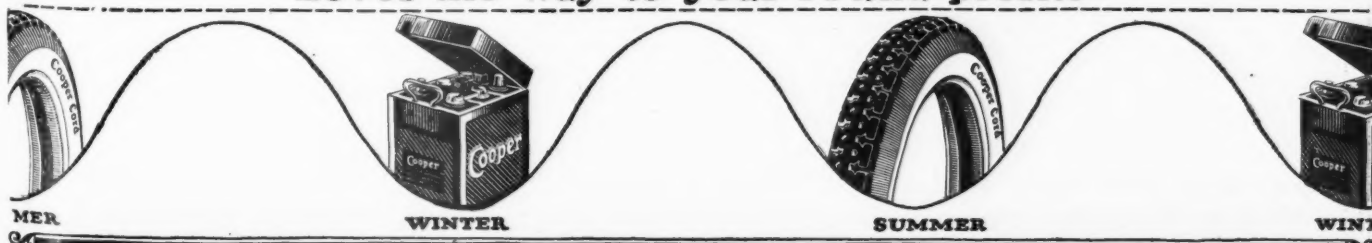
In the histories of two leaders among nations, Great Britain and the United States, the granting of charters has marked the beginning of greatness. England's Magna Charta, and the charter granted the early colonies of America by England and hidden from her in the famous Charter Oak, have given immense significance to the word "charter" in the minds of all Americans.

Thus history has painted a priceless background for the Cooper Charter, and made it an impressive document when framed and hung on your wall, where it can be seen by all. It is a business asset, because it marks you as the chosen representative of a substantial corporation, with a degree of dignity and importance not ordinarily attained. We have prepared a booklet on the Cooper Charter that every tire and battery dealer should send for and read. Write for your copy today.

THE COOPER CORPORATION
CINCINNATI, OHIO

Cooper Products
TIRES BATTERIES

"Level the way to year 'round profits"



New Motor Truck Franchise Breaks All Precedents

For the first time in automotive history it is possible to secure a motor truck distributing franchise covering large territory without making the customary investment.

The advertiser is a strong company located in Michigan. The truck is already on the market with national distribution. The company makes a complete line of motor trucks busses and coaches.

The motor truck business is coming back fast. We are preparing now for this fast coming prosperity. Within the next 60 days we want to be represented in every county by a dealer of *exactly the right type*. Distributors must be of the calibre to present this unusual proposition to dealers.

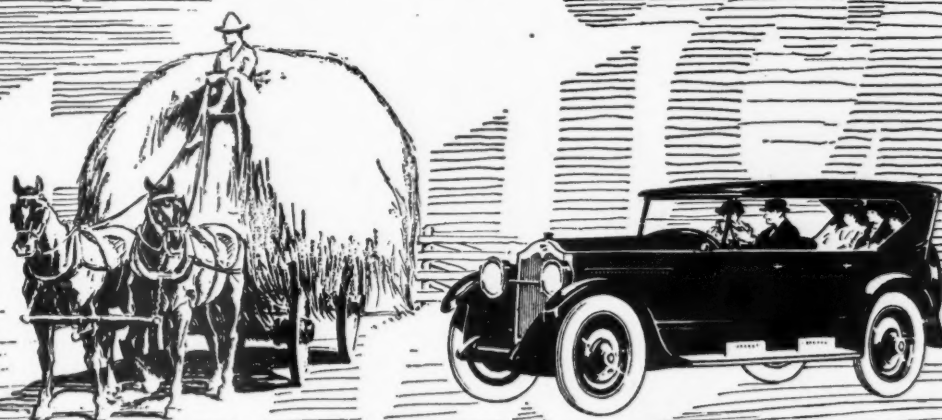
We want men who know something of motor trucks—who have selling ability—who have the vision to recognize motor trucks as a basic transportation necessity—who are ambitious to own paying businesses of their own.

Limited capital need not keep able men out of a distributorship for this, the greatest automotive proposition that has ever been offered.

We are forming a highly efficient and most complete truck selling organization. Intensive and enthusiastic factory cooperation is being extended. The quality of the truck and the reputation of this company, make this distributing franchise an unequalled money-maker.

All present members of our dealer organization know of this advertisement. Regardless of what your present activity may be, you can write in confidence. Please give complete details of your qualifications. Address

DISTRIBUTING OPPORTUNITY
c/o Motor Age, 5 So. Wabash Ave., Chicago, Ill.



Safety for Emergencies!

Buick Four-wheel Brakes

Buick four-wheel brakes meet the demands of present day traffic conditions by having power in reserve to insure a rapid, safe and reliable "stop".

Actual braking effectiveness is practically doubled by Buick four-wheel brakes. This is accomplished by slowing down the two front wheels. Each brake band has a three-quarter wrap or grip on its brake drum, rather than the half-way wrap in common practice.

The Buick four-wheel brakes are an integral part of the Buick front axle design. Their arrangement and operation are simple. The front brakes are coupled in relation to the rear so that when the brake pedal is operated more pressure is put on the rear brakes than on the front.

Buick four-wheel brakes [on all models] are one of many definite advances in motor car operation and maintenance that the 1924 Buicks have contributed to automobile transportation.

BUICK MOTOR COMPANY, FLINT, MICHIGAN

Division of General Motors Corporation

Pioneer Builders of Valve-in-Head Motor Cars

Branches in All Principal Cities—Dealers Everywhere

Sixes

5 Pass. Touring - . . . \$1295	7 Pass. Sedan - . . . \$2285
2 Pass. Roadster - . . . 1275	Brougham Sedan - . . . 2235
5 Pass. Sedan - 2095	4 Pass. Coupe - 1995
5 Pass. Double Service Sedan - 1695	Sport Roadster - 1675
7 Pass. Touring - 1565	Sport Touring - 1725

Fours

5 Pass. Touring - . . . \$965	5 Pass. Sedan - . . . \$1495
2 Pass. Roadster - . . . 935	4 Pass. Coupe - . . . 1395

Prices f. o. b. Buick Factories; government tax to be added.

When better automobiles are built, Buick will build them



Do You Still Put a Car Up for a Day to Install a Dash Switch?

When a man drives up and says, "Can you fix me up with a switch to control this spotlight"—what do you say?

"Yes, but it takes quite a while, and we're a little crowded just now for time. Can you leave the car?" ?

OR

"Drive it in, we'll have it tomorrow for you!" ?

Or can you step out with a brisk *"Yes, Sir! Just two minutes and we'll have it all fixed for you."* ? Do you know about the new C-H One-Hole Switch that requires only a single 7-16" hole for installation—no measurements to fuss with—no screws to align—no plate to square with the other instruments?

This new switch, too, because of its ease of installation, builds real profits for you—opens brand new roads to gain. No matter what the charge was for installing the old style switch, the customer always felt it too high, and the man installing it never made money because the job did not show the time it required. However, with this new switch your minimum labor charge for the few minutes the job takes, makes your time earn dollars—in addition to your profit on the sale of the switch. Also, many men who would not bother with the old type dash switch, nor pay to have the work done, will buy this new C-H One-Hole across your counter to install themselves.

Order a carton from your jobber today; they are packed in neat unit boxes for counter sales and handy cartons of twenty. If he has not yet been stocked, write direct and we will see that you are supplied.

THE CUTLER-HAMMER MFG. CO.

Switch and Specialty Department

Works: MILWAUKEE and NEW YORK

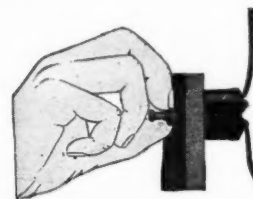
Easiest to Install



Drill or punch one 7-16 inch hole in the dash at point where the switch is desired.



Adjust set-rings to thickness of dash and insert switch stem.



Turn home the knurled locking collar and the switch is installed. Note mechanism is completely enclosed. Full sized binding screws with cupped washers make wiring easy.



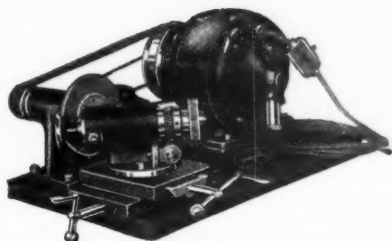
One Hole

AUTOMOBILE SWITCH

*They go hand
in hand!*



*Make it a
100% Job!*



**The Franklin Model B
Valve Grinder**

—adopted as standard Service
Station Equipment by more
than a score of Automobile
manufacturers.

Put pistons and valves in as good shape as you do
the cylinder bores.

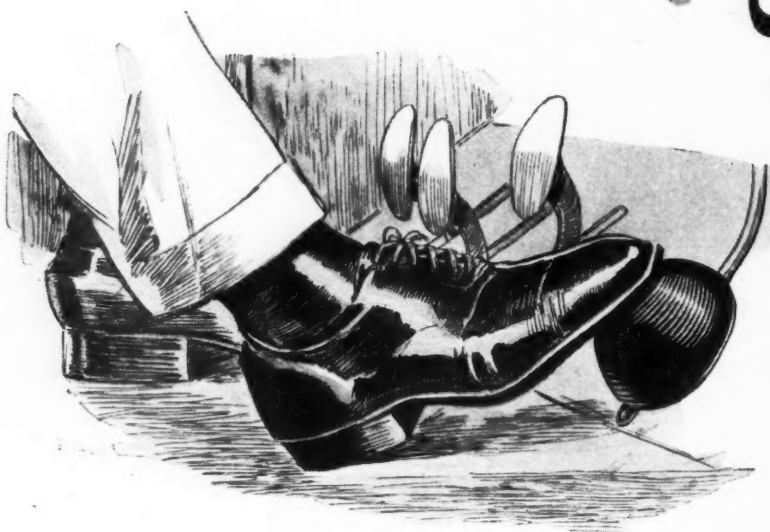
A honing or lapping job on a cylinder bloc means
oversize pistons. To do all of the job right, grind
the new pistons to size on a Van Norman Relio
and grind the valves on a Franklin Model B.

Make it a 100% job—and make satisfied custom-
ers at the same time. Send for Bulletins.



Van Norman
machine tool co.

SPRINGFIELD ~ ~ ~ ~ MASS.



You can't feed too much gas!

\$3.00
Buys it

The new Air Control feeds the gas just as fast as the engine can use it—but no faster. Your motor accelerates swiftly, smoothly—and without choking or bucking.

3 Min.
Installs it

Nine times out of ten, engine choking is caused by too sudden acceleration.

The foot jams down the pedal. Through rigid metal connections, the carburetor is shocked open, and the engine is choked with gas before it has a chance to speed up.

With the M. P. C. Pneumatic Accelerator, every touch on the foot bulb is cushioned before its effect is felt by the carburetor.

Little jiggling taps are never felt by the carburetor at all. Quick, hammer-like blows are transformed into swift but steady pressure.

The result is steady, even carburetor control—and consequent steady, even acceleration. The engine speeds up as quickly as it can utilize the gas—with amazing smoothness.

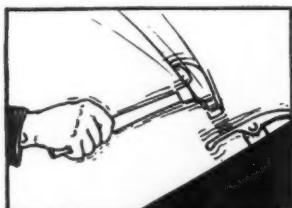
More than this—the M. P. C. Pneumatic Accelerator can instantly be placed any-

where on the floorboards. It is immediately adjustable to suit the driver. No extra footrest is required. Only three minutes are needed to install it, without the use of screws, or holes in the floorboards. It is simple in design, well made, and it is absolutely guaranteed by its makers, one of the most important part makers in the whole automotive industry.

Users of this new appliance are rapidly mounting into the thousands. Try to replace an M. P. C. Pneumatic with any other type of accelerator. Then you'll hear of its advantages from men who know.

Their opinions will tell you, better than any advertising of ours, how important it is that you be in position to offer this increasingly popular device to your many customers who will buy an M. P. C. Pneumatic from some one soon. Write, today, for prices and discounts. Order a sample. You'll need it, and hundreds more!

(27)

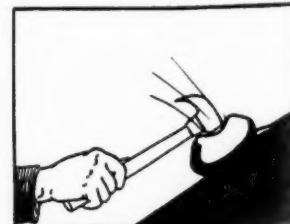


Hit the ordinary accelerator! The rigid, metal connection to your carburetor will "shock" it open. Your engine will either race, or choke. That's what happens when bumps cause your foot to "jiggle" the pedal.

Motor Products Corporation
11805 Mack Ave., Detroit, Michigan

M. P. C.

Pneumatic ACCELERATOR



But strike the M. P. C. pneumatic bulb and the carburetor never knows it. The air is resilient. It responds instantly to pressure, but cushions shocks. Jolting can't cause uneven acceleration.



Jacobs Chucks
Standard
Equipment

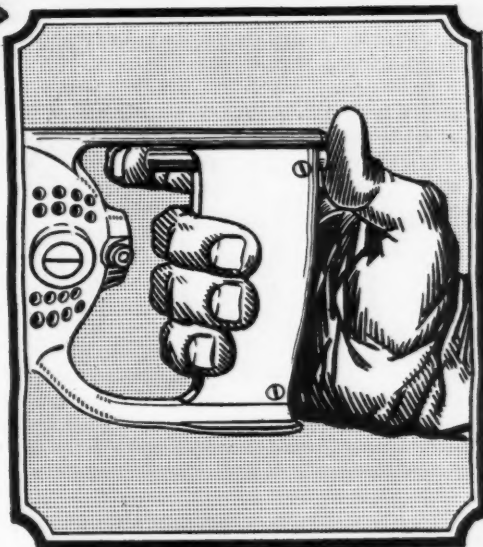
Just Born!

And weighs five and three-quarter pounds!

A NEW arrival in the U. S. family—a “baby” drill: Baby in size and weight, but in no other respect.

This is what service men everywhere have long been looking for—a Portable Electric Drill for all-around garage use: so light, so compact, so easily controlled, so accurate, so powerful and so speedy that a child could just about run it with his eyes closed.

The handle of this “U. S. Automatic” is cast integral with the aluminum body, and is on a straight line with the Jacobs three jaw screw back chuck. The switch is something brand new—and a feature that will make a big hit with every mechanic. Note its location at the top of the grip, where a slight pressure on fore-finger or thumb starts or stops it. When running, the switch makes a very helpful grip support.



UNITED STATES
Portable Electric
DRILLS

Weight—just 5¾ pounds. A handful of speed, energy and accuracy. Rugged—you can't hurt it or overwork it. Always cool. Ball bearings. Universal motor—plug to any electric light socket. Eight feet of rubber covered cable and a one piece swivel attachment plug.

Ask for descriptive folder and for catalog 20C.

The UNITED STATES
ELECTRICAL TOOL CO.
CINCINNATI, OHIO.

District Sales Offices and Service Stations

Boston	Detroit	New York
Chicago	Houston	Philadelphia
Cleveland	Kansas City, Mo.	Pittsburgh
Columbus	Milwaukee	St. Louis
	Minneapolis	Toledo

Complete stock carried in all service stations



GATES HOSE

"The Standardized Radiator Hose"



Marked by Inches
Easily Cut to Length

Another record. $3\frac{1}{2}$ miles of radiator hose per day — that's the rate at which Gates Vulco Hose is now being made and shipped.

Made by the World's Largest
Manufacturers of Fan Belts.

Ready!!

Biflex Brackets for 1924 Models

STOCK NOW FOR THESE MAKES OF CARS

Allen	King Eight
Ambassador	Kissel
American	Lafayette
Anderson	Lexington
Apperson	Lincoln
Auburn	Liberty
Barley	Locomobile
Bay State	Marmon
Birch	Maxwell
Bour Davis	McFarlan
Brewster	Mercer
Buick	Mitchell
Cadillac	Moon
Case	Nash
Chandler	National
Chevrolet	Noma
Cleveland	Oakland
Cole	Oldsmobile
Columbia	Packard
Crawford	Paterson
Cunningham	Premo
Dagmar	Paige
Daniels	Peerless
Davis	Pierce-Arrow
Detroit Electric	Pilot
Dixie Flyer	Premier
Dodge	Renault
Dorris	Reo
Dort	Revere
Duesenberg	Richelieu
Durant	Rickenbacker
Earl	Roamer
Elcar	Rolls Royce
Elgin	R & V Knight
Essex	Simplex
Fiat	Standard
Ford	Stanley Steamer
Franklin	Stearns Knight
Gardner	Stephens
Grant	Stevens-Duryea
Gray	Studebaker
Handley-Knight	Stutz
Haynes	Templar
H. C. S.	Velie
Hispano Suiza	Westcott
Hupmobile	Wills Ste. Claire
Hudson	Willys Knight
Jackson	Winton
Jordan	
Jewett	

Brackets for attaching Biflex bumpers to all announced 1924 models are ready.

Simplicity of installation has been achieved without any sacrifice of the sturdiness and rigidity that has made Biflex reputation.

Buick, Dodge and Hupmobile frame changes, both front and rear, have necessitated entire new attachments of which our Engineering Department is justly proud.

Your customers will share this pride.

Our Distributor in your territory is prepared to fill your orders.

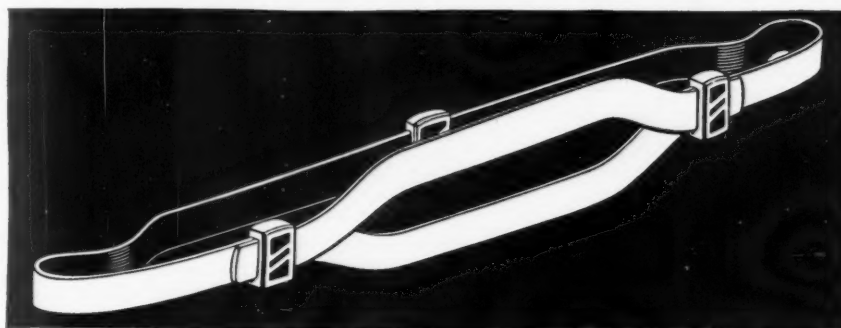
Remember, there is only one Biflex—the original.

THE BIFLEX CORPORATION

Waukegan, Illinois

Biflex

Cushion Bumper



PROTECTION WITH DISTINCTION

Use Year 'Round Comfort as a Sales Aid

DEALERS who sell Perfection heated cars have a real advantage when it comes to closing sales. They are able to sell year 'round comfort.

627 motor car dealers have definitely told us that they use Perfection Heaters as one of their important selling arguments.

Over 200,000 cars will be equipped with Perfection Heaters this year. Their qual-

ity and dependable performance is widely recognized and has been proven by more than 75% of all car manufacturers who use heater equipment.

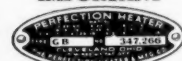
If the cars you handle are not Perfection Heater equipped you need not lose sales on that account. Sell a Perfection Heater every time you sell a car. There's a handsome profit in it for you. Order from your jobber.



PERFECTION MOTOR CAR HEATERS

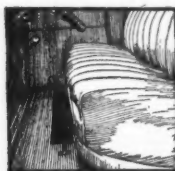


IMPORTANT



The real works of an automobile heater are hidden under the floor. You can't SEE the quality. The Perfection nameplate which is in plain view on every genuine Perfection Heater is just as much a protection to the dealer as it is to the car owner. If it isn't on the heaters in the closed cars you sell find out why.

The Perfection Heater & Manufacturing Co.
6545 Carnegie Avenue . . . Cleveland, Ohio
Manufactured in Canada by
Richards-Wilcox Canadian Co., Ltd., London, Ont.



The following manufacturers provide real winter driving comfort by equipping their closed models with Perfection Heaters without extra charge.

Auburn	Durant-Flint-6	Kline
Buick 4-Cylinder	Earl	Mercer
Buick 6-Cylinder	Elcar	Meteor
Case	Fox	McFarland-Special
Cunningham	Gardner	Moon
Davis	Haynes	Nash 4-Cylinder
Dorris	Henney-6	Nash 6-Cylinder
Duesenberg	King	National
Durant-4	Kissel	Oakland

Paige
Pilot
Premier
R & V Knight
Standard "8"
Stephens
Stevens-Duryea
Studebaker
Stutz
Templar
Velle
Winton

Taxi Cab Equipment
Anchor Top & Body Co.
Barley Motor Car Co.
Elkhart Motor Co.
Premier Motor Corp.
Rauch & Lang, Inc.
Yellow Cab Mfg. Co.
Special Body Equipment
Chas. Abresch Co.
—Dodge Special
Lang Body Co.
—Dodge Special

Yes!

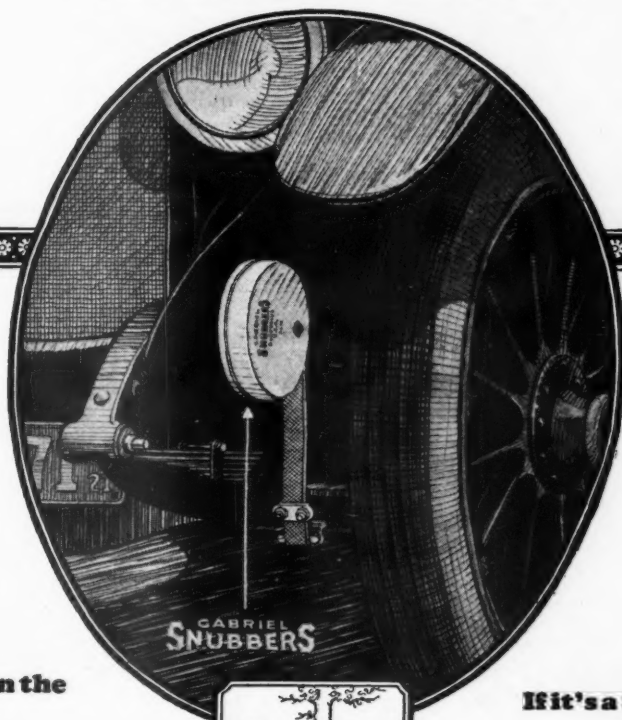
—Gabriel Snubbers should be on your car. Their value is proven by the fact that 71 automobile manufacturers either use them as standard equipment or put holes in the car frames for them.

Sold by legitimate dealers

GABRIEL MANUFACTURING COMPANY
1415 East 40th Street Cleveland, Ohio

GABRIEL SNUBBERS

THERE IS NO OTHER



**Keep You on the
Seat
Save Your Car**



**If it's a Snubber
—it's a
"GABRIEL"**

for Economical Transportation



The Move Towards Chevrolet

Our mails contain a great many letters from automobile dealers seeking Chevrolet selling franchises.

We are pleased to receive this added evidence that "the eyes of the world are on Chevrolet."

With the wonderful increase in our sales due to public appreciation of Chevrolet's unsurpassed value, has come such a broadening of our market that new and valuable dealer opportunities are apparent in every State—often at points that appear to be closed, yet

are not up to our standard.

Every application is given very careful consideration, not only out of courtesy to the inquirer, but also because the standards we have set for Chevrolet representation are such that only the best class of dealers can qualify as direct dealers.

The profit opportunity for the Chevrolet dealer is so superior, and our firm policy of fair treatment is so well established, that we are able ultimately to secure for every territory the best grade of representation.

Chevrolet Motor Co., Detroit, Michigan

Division of General Motors Corporation

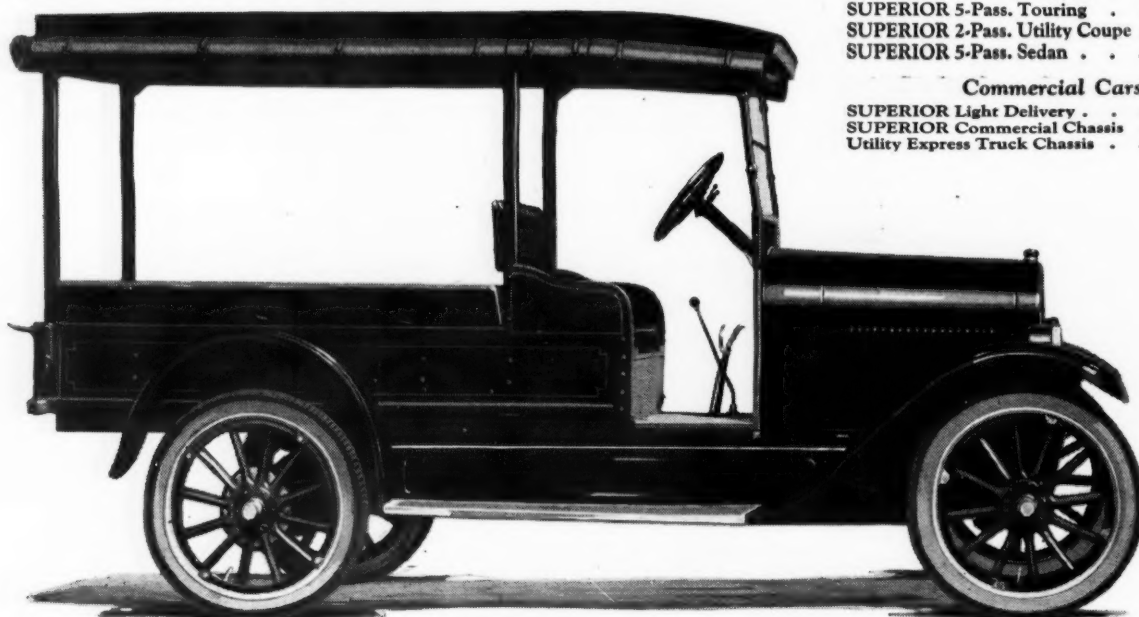
Dealers and Service Stations everywhere. Applications will be considered from high-grade dealers only, for territory not adequately covered.

Prices f. o. b. Flint, Michigan

SUPERIOR 2-Pass. Roadster	\$510
SUPERIOR 5-Pass. Touring	525
SUPERIOR 2-Pass. Utility Coupe	680
SUPERIOR 5-Pass. Sedan	860

Commercial Cars

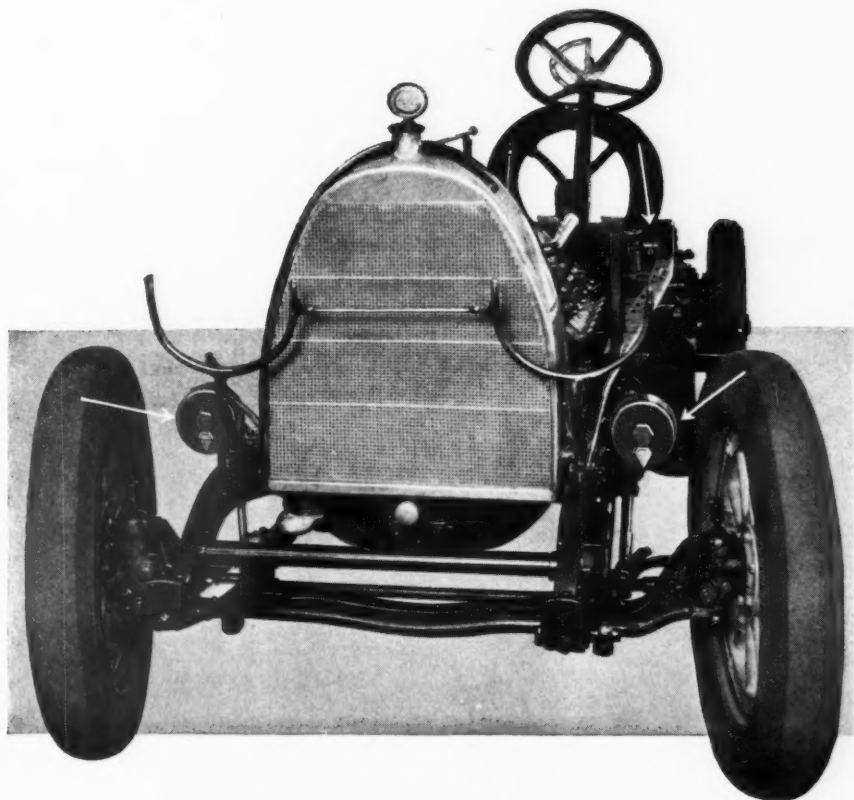
SUPERIOR Light Delivery	\$510
SUPERIOR Commercial Chassis	425
Utility Express Truck Chassis	575



Superior Light Delivery \$510 f. o. b. Flint, Michigan

On the
DANIELS EIGHT

DANIELS CARS—the first choice of thousands of super-discriminating motorists—are each STABILATED as they come down the production line at the DANIELS Factory.



JOHN WARREN WATSON COMPANY
Twenty-fourth and Locust Streets
Philadelphia

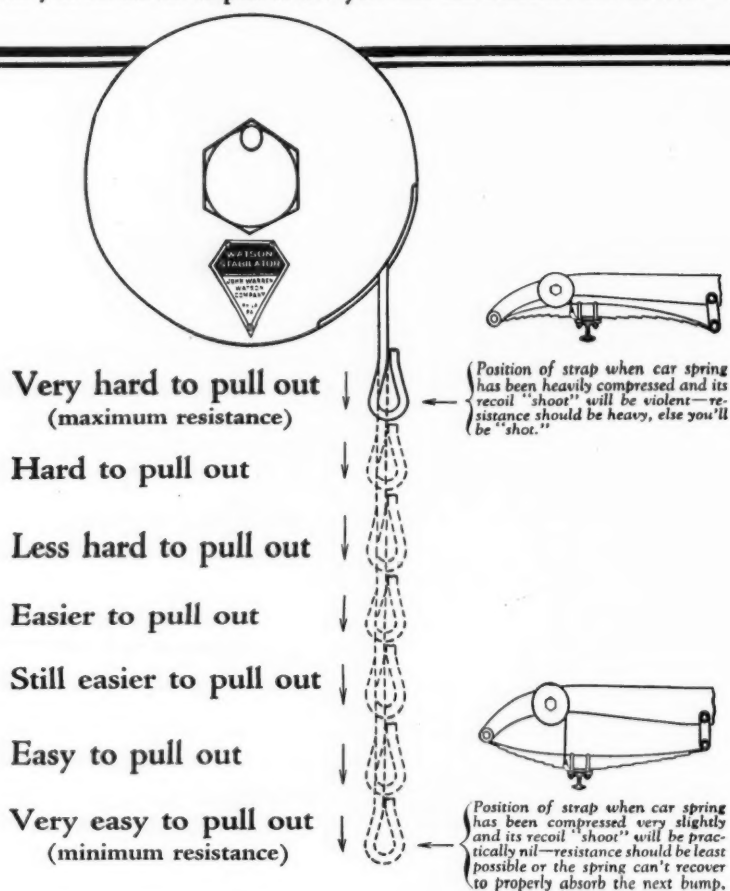


WATSON
STABILATORS

Change the Whole Nature of Your Car

Have You Ever Made This Test?

Clamp any recoil check in a vise, brace your foot up against the bench, and then tug on the strap. According to whether the strap offers less and less resistance or more and more resistance as you continue to pull it out you can tell whether the device is right or wrong.



YOU will find that a STABILATOR strap, as illustrated herewith, offers very stubborn resistance at the *beginning* of the pull and gradually resists less and less as you keep pulling it out. Thus a STABILATOR is not, in effect, a jump strap, but is a brake which automatically resists heaviest when the car spring is fully compressed and its recoil force is most violent—and resists less and less accordingly as the recoil force is less violent.

This resisting of each varying recoil force in *proportion* to that force is nothing more than an adherence to the same logic which tells us to put small brakes on the wheels of a Ford car and very large and powerful brakes on the wheels of a Mack 5-ton truck.

You need not take anyone's "say so" as to whether or not this, that or the other device offers correct, proportional resistance to the varying forces of spring recoil—just clamp the thing in a vise, tug on the strap, and *know* what it gives.

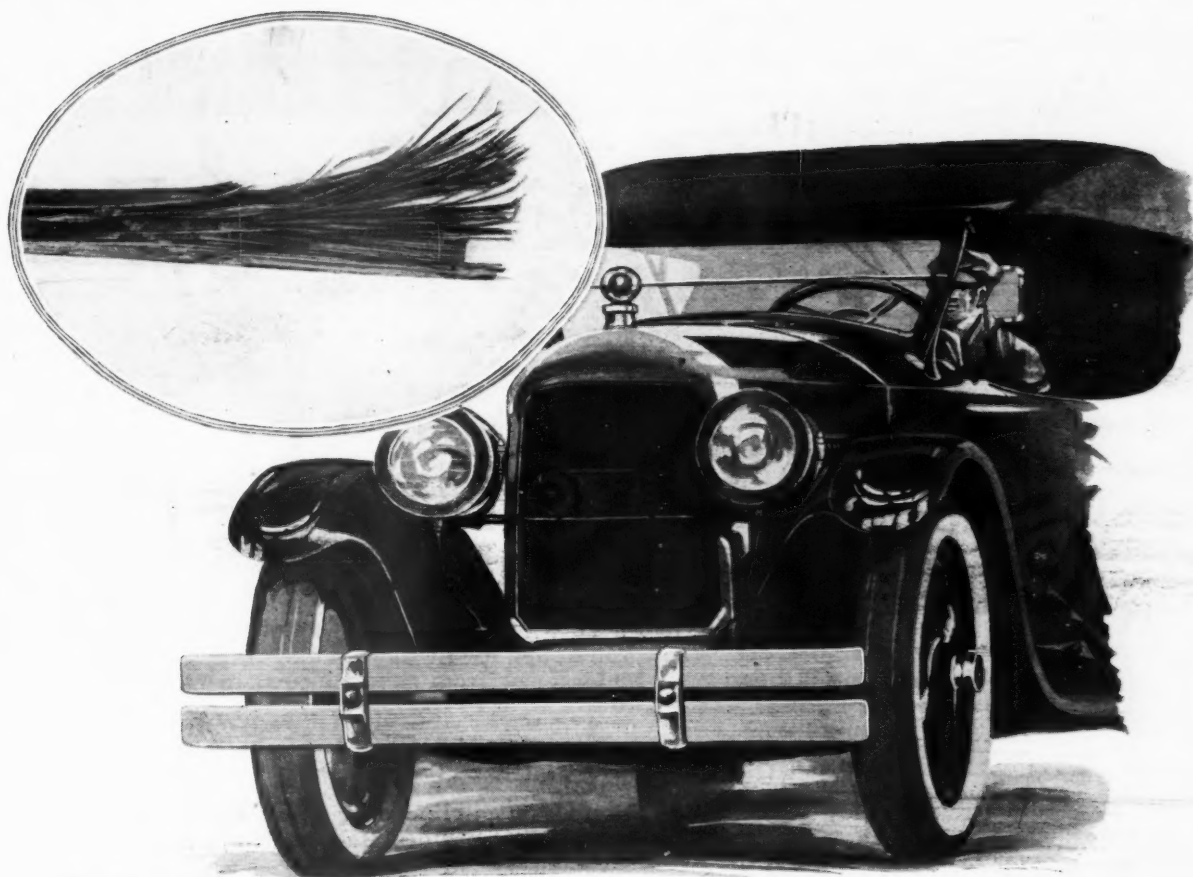
JOHN WARREN WATSON COMPANY, PHILADELPHIA

Twenty-fourth and Locust Streets



WATSON STABILATORS

Change the Whole Nature of Your Car



Fibrous Resiliency

THIS is the secret of the great strength of the Hays Hickory Hitter, a strength which makes our "A New Bumper Free If It Breaks" guarantee most logical.

Hickory is totally different from all metals in that it is composed of millions of individual, nature grown fibers, each of which has a strength and resiliency of its own. Each fiber offers an individual resistance to shocks. As a result, there can be no quick breaks as in over-tempered steel nor can there be any sharp bend as in under-tempered steel. Also temperature has no effect on the strength or resiliency of hickory—it being neither too pliable in summer nor too brittle in winter.

Note the photograph of the broken Hays Hickory Hitter bar in the oval insert. This bar was broken when the car to which it was attached collided with a train. See how the Hickory bar is torn and shredded and judge the tremendous resistance offered before it was finally broken through.

Not only do the hickory bars give this great strength and resiliency but because of them, Hays Hickory Hitters weigh

only about one half as much as steel or iron bumpers, thus lessening greatly the wear on car and tires.

The balance of the Hays Hickory Hitter is entirely worthy of the fine straight grained, steam bent, hickory bars. Finest crucible steel springs, scientifically shaped and tempered, massive polished brass castings, which hold the bars always tight to the springs—and positive fittings for every make and model of car.

All this makes the Hays Hickory Hitter a bumper which we can successfully guarantee for the life of your car—a guarantee unequalled in the bumper field.

Dealers: There is no bumper which you can handle with so much satisfaction and profit as the Hays Hickory Hitter. It makes friends for itself and for dealers wherever it goes. One Hays Hickory Hitter on the street means fifty more sales. Write for catalogue and the name of our jobber in your territory, also for our contract plan of sales to dealers.

Jobbers: Desirable territory is still open. Write for details.

HAYS HICKORY HITTER

Guaranteed for life of your car

Double Bar Type

\$18.00

Weighs 27 pounds

"Junior" Double Bar Type

\$15.50

Weighs 20 pounds

Single Bar Type

\$12.50

Weighs 18 pounds

The "Junior" is a double bar type Hays Hickory Hitter made especially for Fords, Chevrolets, Star Cars, etc.

J. M. Hays Wood Products Company

A Division of the Standard Crate & Filler Co.
JEFFERSON CITY, MO.

New Departure Ball Bearings

Short Measure Once Was Taken for Granted



It was not very long ago that motorists were satisfied with 3000 miles on tires, 8 to 12 miles on gasoline, with cleaning spark plugs every day or so, and with the necessity of carrying on every long trip, a well stocked repair shop.

And as for bearings—well, you hoped for the best—and if the worst happened you were laid up until you got a replacement from the exporters in New York or from the motor car factory.

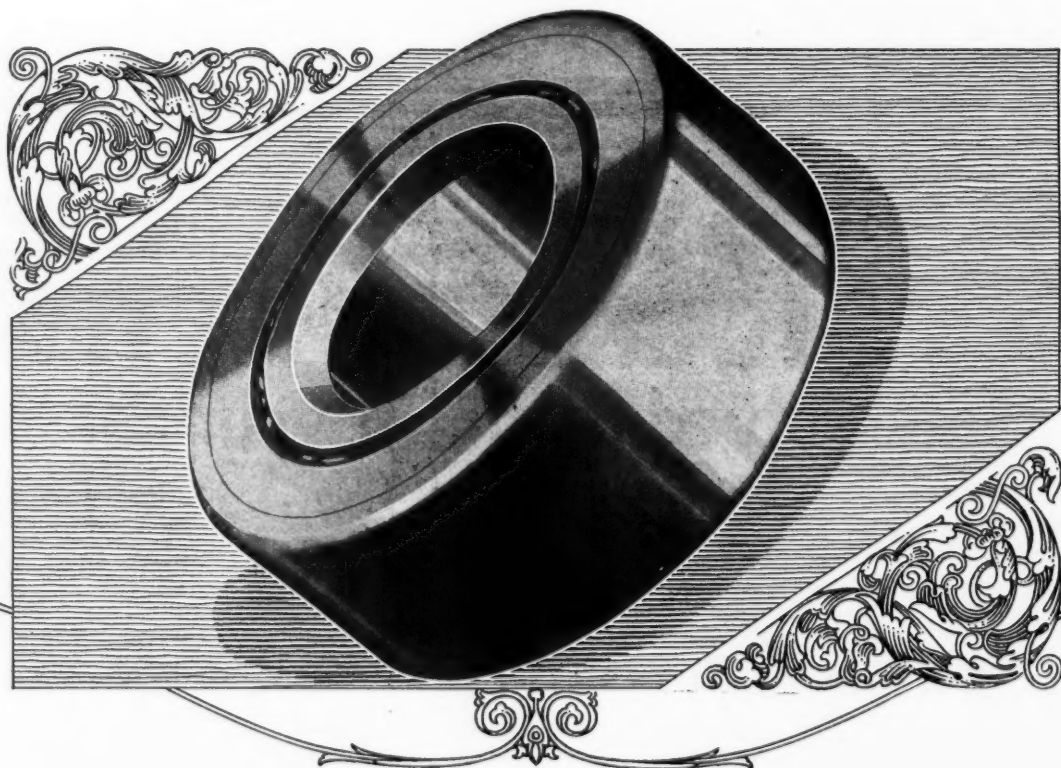
NOW WHAT DO YOU GET?

At least 10,000 miles on tires, 18 to 20 miles on gasoline, a guarantee against pumping oil, and a lifetime of service from your New Departure Ball Bearings, represent the average of expectancy and performance in every good car.

Things are better made and more efficiently distributed now. New Departure Ball Bearings are produced in such superb quality that they are the most widely used ball bearings in America.

Through the direct Branches and Authorized Distributors of United Motors Service, you can quickly obtain New Departures in every town of fair size in the U. S. A. and Canada.

THE NEW DEPARTURE MANUFACTURING COMPANY
Chicago Bristol, Conn. Detroit



Two Kinds of Tires

SOME makes of tires are known by name by every motorist because their advertisements on billboards and in magazines and newspapers greet him at every turn. That does not mean that they are the best tires. It simply means that they are the best known.

With another kind of tires the maker is not interested so much in quantity as in quality. It is not "how many" but "how good." When this manufacturer puts his name on a tire it is with a responsibility just as great as if his name were on his personal bank check. He would be just as unwilling to have *most* of his tires good as *most* of his

checks. They must *ALL* be good. The name on these tires is HANES.

When you handle HANES CORDS, you can recommend them to your friends and customers without reservation because you will use them on your own car and that is the best proof.

We want a Hanes representative in every community. Possibly there is still an opportunity open in your own territory. If you are fortunate enough to secure the HANES franchise, it can become one of the most valuable assets of your business. Take the first step by writing us today.

HANES RUBBER COMPANY

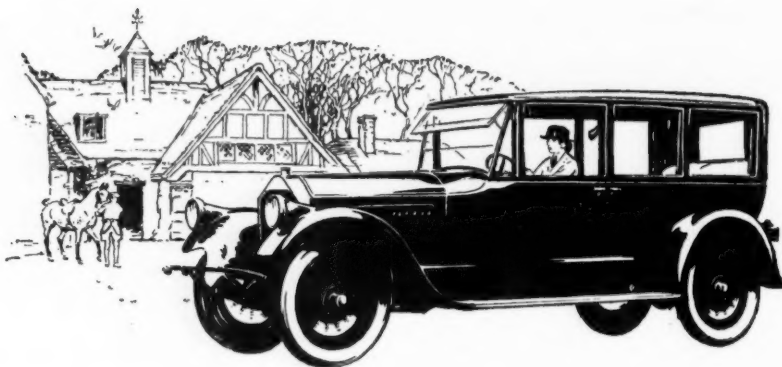
Winston-Salem, North Carolina

HANES CORD TIRES

The High Water Mark in Tire-making Skill



PIERCE



THE ENCLOSED DRIVE LIMOUSINE

Pierce-Arrow dealers who have built up a prosperous business during the last ten, fifteen or even twenty years did not have nearly so favorable an opportunity as now exists in certain territories.

Today Pierce-Arrow is building what owners tell us is the greatest car ever produced in twenty-two years of successful

manufacture. Today Pierce-Arrow is stimulating sales with the largest advertising and merchandising program in the company's history. These factors are producing a sales volume which has eclipsed all records.

We invite correspondence on the subject of the Pierce-Arrow franchise.

THE PIERCE-ARROW MOTOR CAR COMPANY
Buffalo, N. Y.

➤PIERCE-ARROW➤

Open Cars \$5250

Closed Cars \$7000

At Buffalo—Government Tax Additional

ARROW

"PRIDE OF ITS MAKERS MAKES YOU PROUD IN POSSESSION"

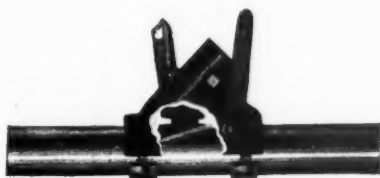
Now! is the time



Heelboard Model
(Black Enamel)



Register Type
(Polished Aluminum)



This Valve Fits 90% of All Cars

Same valves can be used for all cars with exhausts up to 2 1/4 in. by using our patented steel shims which are furnished with every valve. This enables you, by carrying any one of the numbers except the special for Fords, to equip 90 per cent of the cars. In this way you will always be ready to supply the demand.

Every time a car owner feels a cool breeze at this time of the year he begins thinking about his comfort during the coming winter. Automobile heaters are already being installed and the dealer who hasn't put in his stock yet should lose no time. All indications point to a cold winter. Get set right now for your heater profits.

UTILITY Heaters have always been regarded by jobbers and dealers as one of the leading lines in the field. With the many improvements made in all models these heaters are bound to be more popular than ever.

UTILITY Universal Heaters are now made in the two types most popular with car owners—heelboard and register types. Easily controlled—easily cleaned—sanitary—no operating expense—guaranteed. The special Utility Manifold Heater for Fords is described below. Order from your jobber.

Jobbers: Get in touch with us.

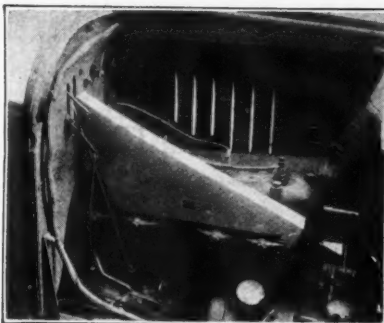
THE HILL PUMP VALVE CO.

4601 Belmont Ave.

Chicago

UTILITY Manifold Heaters for Fords

Price \$1.75



Made of one piece, heavy gauge, cold rolled steel, formed and electrically welded. Nickel plated—therefore no odor as with enameled heaters. Easily installed without removing any part of car or cutting the floorboard. Floorboard can be removed without removing heater. Shutter can be operated with hand or foot.

Packed 25 in a case.

UTILITY *Universal* HEATERS

The Shade That's Got 'em All Buying—

This shade is instantly adjusted to any desired shading position with one hand—from the driver's seat.

You raise or lower the shade while driving, by a slight push or pull with the left hand.

Makes Night Driving Safe

Driver simply reaches up and pulls lever—lowering shade and subduing headlight glare of on-coming car. The shade is as easily raised when the blinding headlight has passed.

Eclipse Safety Driving Shade sold the moment it was put on the market. Dealers are already sending big repeat orders.

Fits any car. Made in two grades, \$12.00 and \$20.00, beautifully finished—three colors—amber, blue and green. Transparent material cannot warp, sag or buckle. Shade always retains its shape. Improved edge binding methods make this possible. Almost all parts are entirely of aluminum. Non-corroding and rustproof. Neat, trim—an ornament to any car and made for *all* cars.

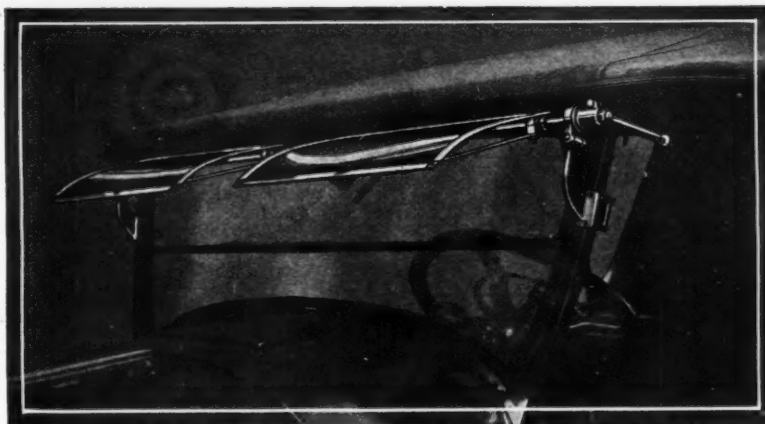
Another big feature: You stock only *one* size for *all* cars.

Get in on the profits now. Ask your jobber or write us direct—at once.

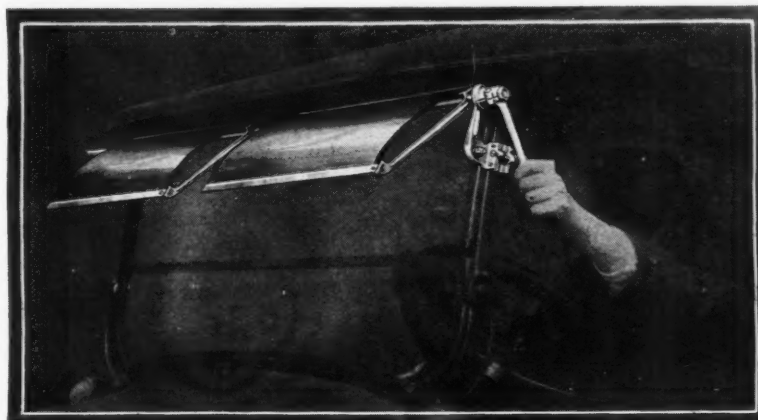
Eclipse Safety Driving Shade is a whale of a seller. Get busy today.

Suburban Transit Company
Plainfield, N. J.

Subsidiary of Spicer Mfg. Co.

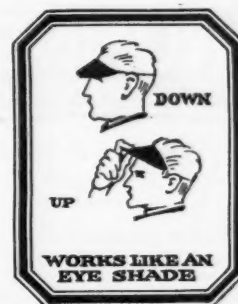


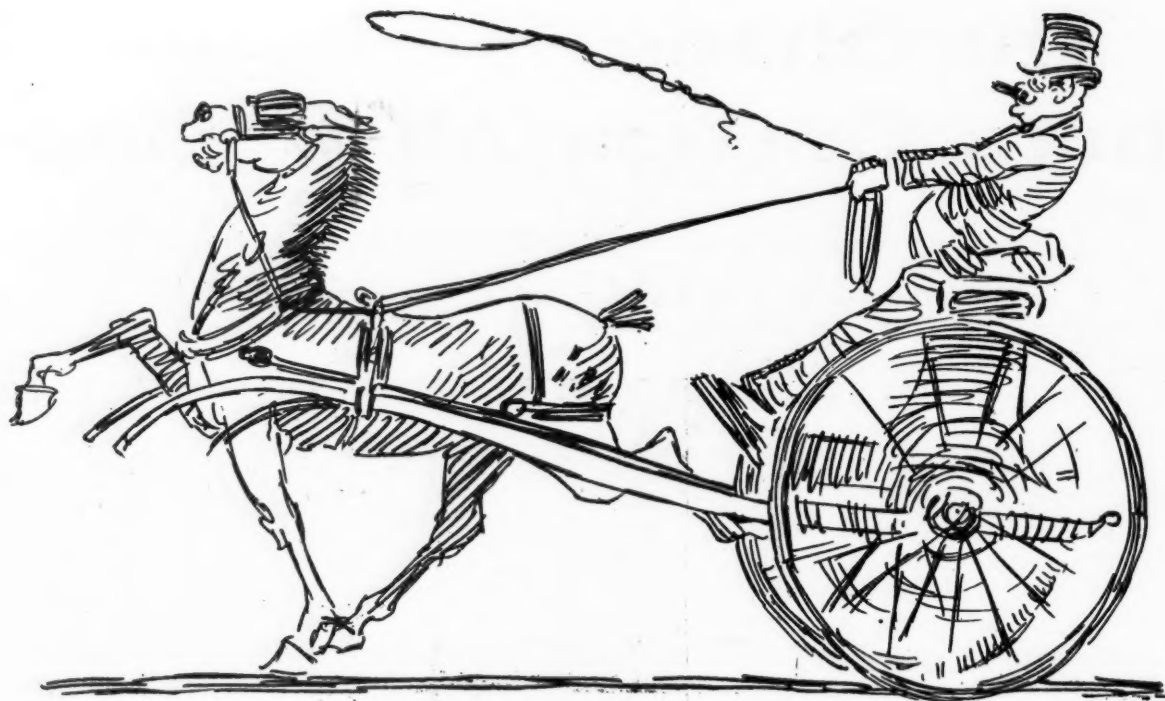
For day or night driving when there is no sun or headlight glare—and shade remains in this position up out of the way.



As the glare of the sun hits your eyes or powerful headlights blind you—simply reach up and pull lever toward you. The shade is lowered to any angle instantly.

ECLIPSE SAFETY DRIVING SHADE





"Then he'd come dashing out on to Connecticut Avenue looking like a Million Dollars!"

There Used to be a Man in Washington Who Sold Horses

DO not buy your compressor in a hurry. Ask your jobber. Write for our literature. Look the machines over. Watch them work. Listen to them. Test them. And then buy the one that, according to actual users, will give you most and cost you least, **PER YEAR!**

(CATALOGED)
in the Red Directory



"Good for 20 Years
at Hard Labor!"

HE bought them down in Virginia, with their winter coats on, looking like mountain goats.

He'd bring them up to Washington, fill them full of oats, shave their hides, teach them a high knee action, "shoot" them full of "hop," and about the time of day when probable purchasers were strolling along Connecticut Avenue, he'd drive his dog cart down a side street, whipping up and pulling in till he had the horse covered with foam and cavorting like a Russian Dancer.

Then he'd come dashing out on to Connecticut Avenue looking like a Million Dollars, and stay there till the horse showed signs of quieting, when he'd hie him back to the side street and repeat the performance.

He made many sales, and much money. But those who bought are still wondering what changed their "mettlesome steeds" into common plugs.

A "doped" horse, or a cheap machine, will make a great showing — for a time. Real Quality shows up best in the "after" service, the continuous grind of daily use, year after year.

There are **BRUNNER** Compressors in active service today, after 15 years of continuous use, whose owners will not consider exchange for new ones except a flat trade, machine for machine.

That one actual condition tells the story of **BRUNNER** Quality better than any words could tell it.

And when it comes to *Modern Up-to-Date Features and Qualities* of real daily assistance to the Dealer — such as Full Automatic Control, an Instantaneous Start, Silent Vibrationless Action, 15 - cents - a - day Maintenance Cost, Full Power, and Fast Tire-filling Efficiency — the **BRUNNER 1923 Line**, with 2-stage, single-stage, 2-cylinder divided - load models, from Giant Assemblies to Small Portable Compressor Units, Double-Tested Tanks, Air Hose, Valves and everything else—the dealer has a choice of selection and an expert advisory service as to methods for exactly filling his own particular requirements, to be found, we believe, nowhere else in the world.

BRUNNER MANUFACTURING CO.

World's Largest and Oldest Builders of Garage Air Compressors

UTICA

CINCINNATI

KANSAS CITY

SAN FRANCISCO



Multiply Your Jack Business This New Way—

Think These Facts Over

One third of our twelve million motorists have no jack of any kind. Half of them need a better jack. This great market is not half covered. Food for thought here—and a chance for profit. Jacks need more display and merchandising.

Ask 'em to buy

No scheme ever devised has sold as many jacks as the Walker Jack Merchandiser. Over 6,000 dealers give it their hearty "O. K." One dealer reports that his sales multiplied over four times the first four weeks. Others tripled and doubled theirs.

Jacks in limelight

The Walker Merchandiser puts your jack business on a different basis. Your patrons can't

help seeing Walker Jacks. They have a chance for real selection. Easy to handle and explain. The motorist is reminded about the jack he ought to buy.

Free with standard assortment

This assortment embraces 7 types of Walker Jacks, 15 in all, including screw and ratchet, light-car and heavy-car, long and short handled types.

Put the Walker Merchandiser in your window or on your floor. Move it about or screw it to the floor, as you please.

Ask your jobber for the details of the Walker Jack Merchandiser proposition.

THE WALKER MANUFACTURING COMPANY
RACINE, WISCONSIN

Walker JACKS

"Dependable in Emergencies"

ALLEN ^(Bay State) WRENCH SETS



*with Allen-Process Sockets
— Guaranteed Unbreakable*

At left: Box Set No. 19, with 9 hex. and 3 square sockets; reversible ratchet or solid wrench; universal joint; long and short extension bars; offset wrench. Price, \$10.00 (list).

At right: Bag Set No. 21-1, with 5 hex. sockets; reversible ratchet wrench; universal joint; extension bar; bent bar; removable adapter; strong, serviceable bag. Price, \$7.00 (list).



It would make little difference what Wrench Set you bought, were it not for the difference in **sockets**. ALLEN cold-drawn sockets make wrench sets give service, everlastingly! They make it worth while to buy the **rest** of the set, so to speak.

With Allen-process sockets (in Allen Sets) go worth-while refinements in wrench design and quality of parts. Ask for the Allen booklet, covering these points and carrying prices.

THE ALLEN MFG. COMPANY


135 Sheldon Street,
HARTFORD, CONN.

Pacific Coast Branch Office: The Charles A. Dowd Sales Co., 320 Market Street, San Francisco, Cal.

Chicago Distributor: J. V. McDowell, 6230 Ellis Avenue

Southern Distributor: The Johnson Sales Co., 1429 Candler Bldg., Atlanta, Ga.

Study the PISTON ASSEMBLY

It's the  of an AIR COMPRESSOR

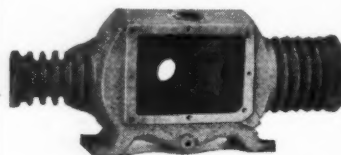
Usaco Rigid Piston Assembly

in a One Piece Casting containing Cylinders and crankcase.



Long, perfectly aligned surfaces. Piston impact distributed largely through yoke.

Single connecting rod with oversize bearings—easily accessible—no possibility of piston slap.



One Casting containing both cylinders and crankcase. Each of the boring, reaming and grinding operations performed on both cylinders simultaneously, insuring absolutely perfect and permanently parallel cylinder walls.

EFFICIENT air displacement depends upon an "air tight" seal between piston and cylinder. When this seal breaks down, because of excessive wear, an air compressor loses efficiency and rapidly depreciates until useless.

Therefore, operating efficiency and length of life depend very largely upon piston design and construction.

The facts herein, comparing exclusive Usaco features with ordinary construction, should be of interest to air compressor buyers. If seriously considered, they will assure the selection of equipment capable of giving the greatest possible length of service with minimum attention and operating cost.

Don't be misled by outer appearances. Buy a Usaco unit, "The compressor embodying many inimitable hidden values." You will then experience many years of top notch service—demonstrating the wisdom of standardizing on these incomparable equipments, as hundreds of others have done.

The
United
States
Air
Compressor
Co.



5304
Harvard
Ave.
Cleveland,
Ohio

Ordinary Piston Assembly with Crankcase

and Cylinders in three separate Castings.



(Pistons not held rigidly in alignment—quicker cylinder wear—2 connecting rods with 4 bearings—small bearing in high pressure piston of insufficient size and improperly located.)



(With three parts, all machined separately and held together by bolts—there is greater possibility of misalignment with rapid wear resulting in premature discarding of the compressor.)

Note: Above disadvantages apply to either vertical or horizontal cylinders.

Why Not Speed-Up Accessory Sales?

There's no mystery or "hokum" about speeding-up or doubling your motor accessory sales—it's simply a case of the right merchandise plus a compelling display. Put your accessories in a

SHERER ACCESSORY DISPLAY CASE

and watch your sales speed-up. Dealers everywhere are profiting by using the "silent selling" Sherer Display Case. This silent salesman is always in view—always selling. Quickly brings added profit to pay for itself.

Study the Diagram!

The cutaway view shows the unique drawer and display arrangement of a Sherer Case.

In other words—the Sherer Accessory Display Case is a "double purpose" case. It serves as a salesman and as a storage place for merchandise. You can sell accessories if you give them a chance to sell. A Sherer Accessory Display Case will do it.

Better write for practical suggestions on how to speed-up accessory sales.

SHERER-GILLETT CO.

17th and Clark Sts.

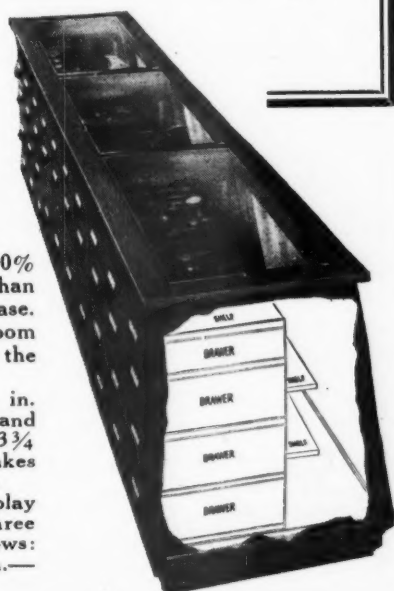
Chicago

**50%
More!**

Notice how you get 50% more display surface than in the ordinary show case. Notice how you have room to store merchandise in the big drawers.

The drawers are 14½ in. long and 17¾ in. wide and are in three depths—3¾ in., 7 in. and 15⅝. Takes all kinds of accessories.

Sherer Accessory Display Case is furnished in three standard lengths as follows: 8 ft. 8 in.—12 ft. 2 in.—15 ft. 10 in.



Detects Electrical Troubles



WESTON
"Fault Finder"

A handy instrument that will save you time and make money for you every day of the year. Makes every electrical test but starting current. Accurate. Dependable. Stands all kinds of rough handling. Has separate ammeter and voltmeter. Clip terminals to quickly connect with current. Replaceable fuse to protect ammeter and prevent burn-outs.

Write for particulars today on this popular and much needed instrument.

Information on other Weston testing instruments will also be sent upon request.

Weston Electrical Instrument Co.
10 Weston Avenue Newark, New Jersey

WESTON

Electrical Indicating Instrument Authorities Since 1888

STANDARD - The World Over

GET THIS SET

It Equips You For

Perfect Piston Pin Work

on over 90% of all pleasure cars made and many trucks



Insures all around satisfaction.

The reamer for the particular job right at hand. Ten perfect tools in graduated sizes, in a sturdy oak case that keeps them safe from abuse and right where you can find them quickly.

Dealers find this set makes a handy display feature and helps sell more reamers. Single reamers can be sold from the case and quickly replaced from your jobber's stock.

The original spiral expansion reamers with self-cutting front pilots. All rough cutting done by rose reamers on end; spiral flutes do finish reaming only. Leave a full bearing surface with a mirror-like finish. Cut smoothly and stay sharp.

Expand accurately. Easy to micrometer.

WILL NOT CHATTER

Ask Your Jobber or Write for Literature

WATERVLIET TOOL CO., INC.

1037 Broadway

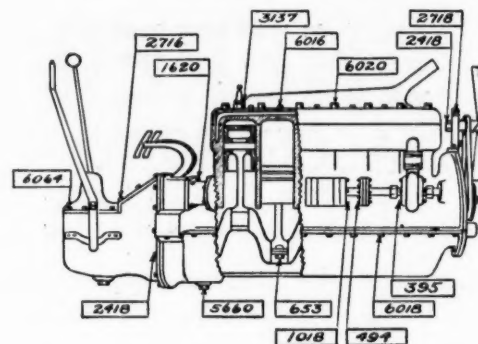
New York
17-21 W. 60th St.

Albany, N. Y.

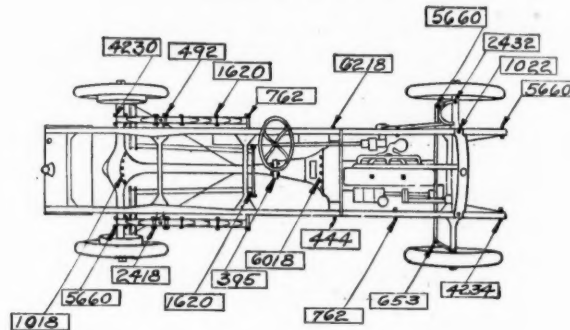
San Francisco
661-665 Turk St.



THERE ARE PARTICULAR
WALDEN-WORCESTER SOCKET WRENCHES
FOR PARTICULAR PARTS
OF EACH PARTICULAR CAR



STOCK NUMBERS AND
STANDARD SIZES
HAVE BEEN SELECTED BECAUSE OF THEIR
PARTICULAR ADAPTABILITY ON ALL
POPULAR CARS



The production of Walden-Worcester Socket Wrenches has been based on careful study of each car's requirements. They are designed to fit the location as well as the nut and are listed, charted and indexed in our service selection sheets which tell you the wrench that fits the job.

There are service selections of Walden-Worcester Socket Wrenches for 62 makes of cars, including the new Star, Gray and Durant.

"Buy Through Your Jobber."

WALDEN-WORCESTER
INCORPORATED
WORCESTER, MASSACHUSETTS

to Dealers only

The success of every auto accessory dealer is dependent upon his foresight in selecting the articles he carries in stock for resale. The only articles a dealer should consider handling are those that have the following qualifications. 1—The article should be a necessity—that is, that motorists really need it. 2—The article must sell rapidly. 3—The article must satisfy—a dealer cannot afford to take a chance with inferior merchandise that is liable to go bad, and so get him in wrong with his customers. 4—There must be a sufficient margin of profit to make it worth while handling. 5—If possible, the article should be one that has no competition.

The FORD FAITHFUL OILING SYSTEM is a device, on the market for many years, that actually overcomes all the drawbacks of the regular Ford system and in addition fills perfectly every requisite of the perfect accessory as outlined above. In addition dealers are greatly helped by the extensive advertising campaign being carried on throughout the country.

DEALERS: If you want to make money, —if you want to make friends, if you want to build up your business on a firm foundation,—write the factory TODAY for full particulars and quantity discounts.

*The Ford Faithful Oiling System
is fully covered by basic patents.
Infringers will be prosecuted to
the full extent of the law.*

W.O. Thompson Mfg Co.

330 Mountain View St.
Pasadena California



NO CONNECTION WITH FORD MOTOR CO.



Cold Weather Coming Brings Calls for the ROBERTSON Radiator Shutter

In a few weeks the chestnut burrs and hickory shucks will be opened by Jack Frost's fingers. You'll see folks driving by with red and gold leaves stuck into the top-supports and around the headlights.

The same frost that brings the buckeyes plunking down on the hard sod is going to nip radiators standing too long at the curb. No longer will the starter buzz a couple of seconds. It will be a long hard grind before the first welcome pop in the muffler.

Now is the time to prepare for Winter Business. Order in your stock of Robertson Radiator Shutters and be ready to serve your customers when the cold weather arrives. It is made for all cars and the price is within reach of every owner.

It is hand operated from the dash (not automatic). Nothing to get out of order, which eliminates all grief and trouble and insures positive control.

De Luxe for large radiators.....	\$16.00
Standard for medium size cars.....	15.00
Chevrolet Special	15.00
Special for Fords	13.50

Manufactured by
ROBERTSON MFG. CO.
28 So. 10th St., Minneapolis, Minn.

Sales Representatives
DAVIS-PALMER CO.
4750 Sheridan Rd., Chicago, Ill.



REPAIRING BATTERY

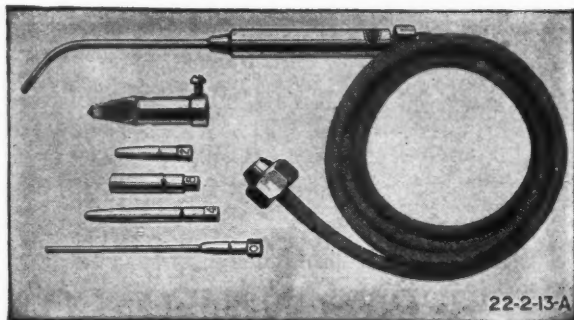
DON'T WASTE TIME

with slow methods. You can solder, or do light brazing in one-half the time with a TORIT TORCH OUTFIT No. 13. Ready the instant you light it. For Radiator repairing, Battery work, loosening rusty and corroded nuts, splicing wires, heating, and hundreds of other uses. Uses Acetylene only.

Outfit complete including torch, 4 different tips, soldering copper, 5 ft. hose and tank connection

\$7.50

TORIT TORCH OUTFIT NO. 13



Get your Torch today from your jobber, or

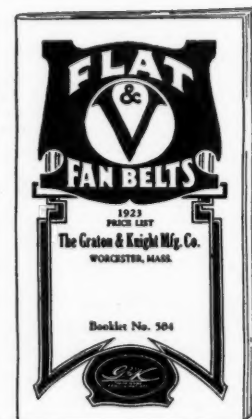
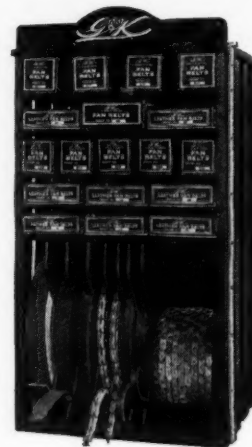
ST. PAUL WELDING & MFG. CO.

169 W. THIRD ST.

ST. PAUL, MINN.

A Combination

that will keep the Fan Belts turning over. The new G & K Booklet No. 504 contains complete information and data about Fan Belts.



Helps you sell G & K Leather
Fan Belts

Real steer hide belts;
natural color

The Graton & Knight Mfg. Company
Worcester, Massachusetts

Automotive Division

Cap Screws

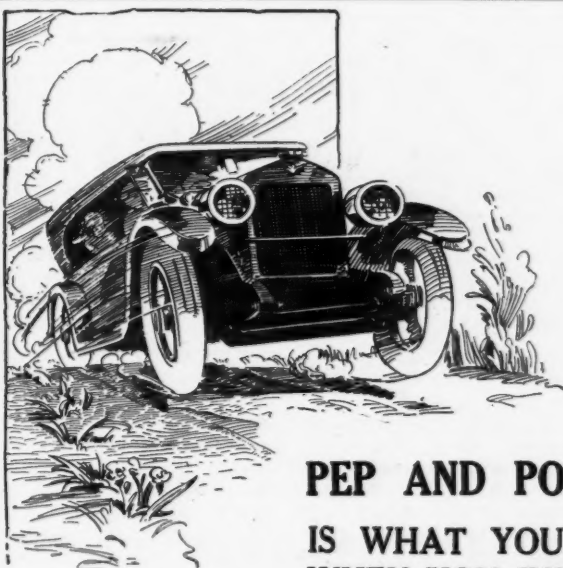
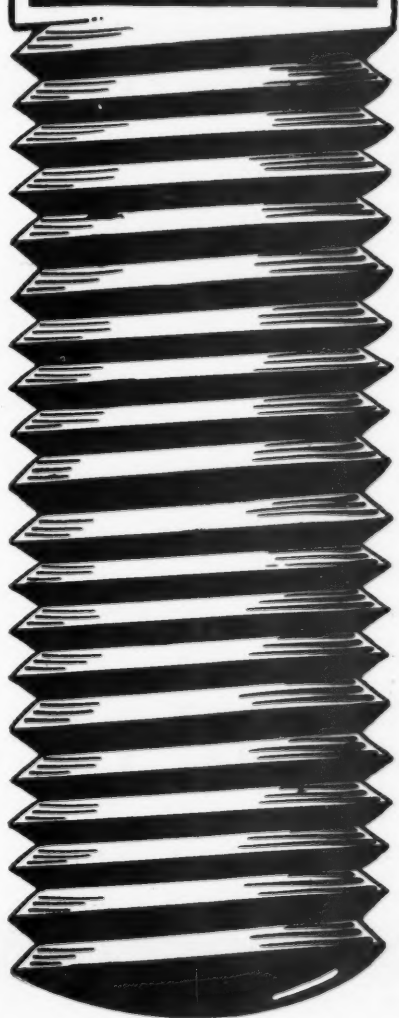
Easily Tightened

The uniformly perfect finish all over every Victor-Peninsular cap screw, bolt or nut sends it smoothly, easily home, to hold until deliberately released.

The saving in time, trouble, breakage adds materially to your profits and the good temper of your men.

You own an illustrated book telling all about Victor-Peninsular threaded parts. If you haven't got it yet, send now for your copy.

VICTOR-PENINSULAR CO.
DETROIT, MICH.



PEP AND POWER IS WHAT YOU GET WHEN YOU INSTALL

FOSTER PISTONS

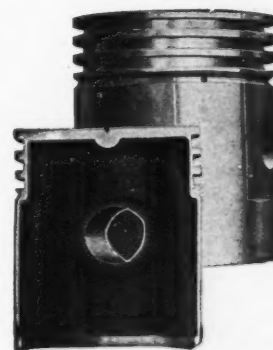
THEY GIVE 7 to 10%
MORE POWER THAN
ORDINARY FACTORY
PISTONS BECAUSE
THEY ARE 30 to 40%
LIGHTER.

Foster pistons have thin walls of uniform thickness reinforced with ribbing, to make them strong. The thickness of the metal in the head together with the ribbing carries away the heat and prevents carbon forming underneath. Oil pumping is eliminated by the special designed oil groove which collects the surplus oil and returns it to the crank case.

The oil groove being located above the wrist pin allows ample lubricant to reach the pin. These are just a few of the good things about Foster pistons.

See them at your jobbers. Judge them for yourself — ask for our complete catalogue.

Our method of manufacture is basically original and is fully protected by U. S. Patents.



The Sensible Light Weight Piston

Foster-Johnson Reamer Co.

1056 Beardsley
Avenue



ELKHART,
IND.

Child or Stepchild? An Analogy

Maximum pressure—tank storage capacity—motor characteristics—automatic starting duty—frequency of operation—these are but a few of the problems peculiar to air compressors for free air service in garages and filling stations. It is to the purchaser's own greatest interest and protection to see that his CURTIS compressor outfit is a genuine CURTIS factory built product, factory guaranteed, supplied and sponsored by a designing, engineering and manufacturing institution with a career of 69 successful years.

When you purchase a CURTIS garage compressor outfit, built complete by the CURTIS organization in the CURTIS plant, your protection lies in the following facts:—

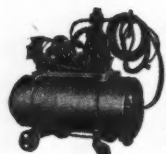
- 1—The proper relation and suitability of component parts. No misfit motors, switches and the like. Speeds, loads and capacities are right, starting loads are eliminated and there is a consequent freedom from trouble and expense which the chances favor in an amateur assembled outfit—a "stepchild" at best.
- 2—A complete unit tested as a unit under its own power in addition to the usual separate test of component parts; a final check-up under your actual running conditions duplicated in our shop.
- 3—The CURTIS guarantee covers the entire unit as a whole and the CURTIS organization stands back of it as a unit; no divided responsibility, no shifting of the blame for possible trouble later on,—“no passing of the buck.”

A Two-Stage Compressor Is Only as Good as Its Intercooler

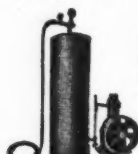
Curtis
Style "V"
Two-Stage
Outfit



- (a) COPPER Intercoolers with thin radiating fins rigidly attached are original with CURTIS two-stage compressors. One hundred and thirty-five per cent better heat-conducting properties than cast iron, 112% better than steel and 27% better than aluminum.
- (b) CURTIS Intercoolers are approximately 50% longer and have about 100% more heat-radiating fins than competing designs.
- (c) CURTIS Intercoolers are exposed their entire length to the cool blast of the fan flywheel. All the features of the CURTIS Single-Stage, plus real two-stage efficiency.



Style "X"
Single-Stage
Outfit
Portable,
Belted or
Geared. Five
sizes, A.C.
or D.C. Motor.



Style "S"
Single-Stage
Outfit Belted
only. Five
sizes, 1/4 to 3
H.P.

We manufacture a complete line of both single and two-stage air compressors. A style, size and arrangement to meet your particular need. Write at once for full details and prices.

CURTIS PNEUMATIC MACHINERY CO.

1527 Kienlen Avenue St. Louis, Mo., U. S. A.
Branch Office 530-H Hudson Terminal, New York City.
Canadian Representative: Joseph St. Mars, Winnipeg and Toronto, Can.

Curtis Pneumatic Machinery Co.
1527 Kienlen Ave., St. Louis, Mo.

Gentlemen:—Please send me descriptive folder and full particulars on Curtis Air Compressors.

Name

Address

Jobber's Name

Address

"ATLAS" RADIATOR FOR

FORD CARS and TRUCKS

ATLAS SHELL
WITH "ATLAS" CORE

STANDARD FORD SHELL
WITH "ATLAS" CORE



NOTE HOW PERFECT THE STANDARD FORD SHELL FITS THE "ATLAS" CORE

INTERCHANGEABILITY

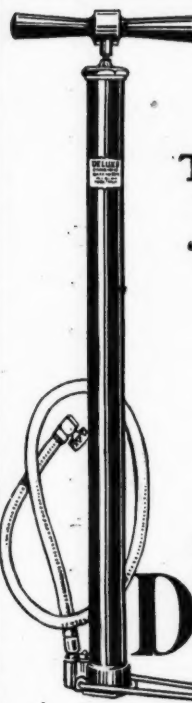
—a big word that means a lot to the Ford owner and the dealer.

The shell of the "ATLAS" radiator is interchangeable with the regular standard Ford shell, and therefore it is not necessary to buy the "ATLAS" complete.

Installing an "ATLAS" core saves money for the owner and has an appeal that makes ready sales for the dealer. Write for details.

The Steidle Mfg. Co.
Cincinnati, Ohio

DE LUXE
Products
For the Motorist's Comfort



The pump that
has seen no
"better days"

Only \$3.50 Retail

ORDER DIRECT
SPECIFYING
JOBBER

The
DeLuxe
TIRE PUMP

Also
ARVIN HEATERS
DE LUXE,
DE LUXE VENTILATORS

INDIANAPOLIS PUMP & TUBE CO.
INDIANAPOLIS

Rie Nie

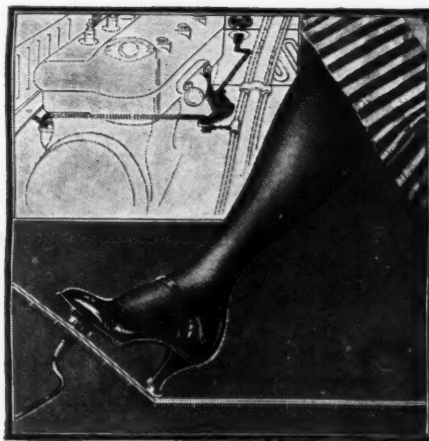
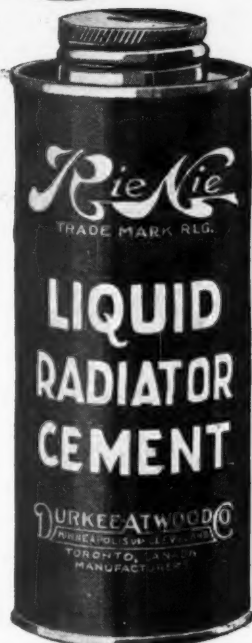
Radiator Cement

Radiator trouble time is just ahead. Stock Rie Nie Liquid Radiator Cement now and take no chance on missing these rush calls.

Backed by the well known Rie Nie reputation, here is the radiator cement that motorists want and that dealers for years have found most satisfactory to sell.

Ask your jobber or write direct.

DURKEE-ATWOOD®
MINNEAPOLIS, MINN., U. S. A.



You Don't Ask 'Em to Buy You Ask 'Em to Wait

That has happened to several dealers who sold out before their repeat order was delivered. And the customers waited without grumbling, because they had seen for themselves the economy and convenience of

D-P Accelerators For Fords \$2.50

Being made on the principle which big-car designers follow, D-P Accelerators give the Ford big-car control. They stay in order, are very easy to install, and entirely free from complications.

All those features make sales fast. The wide discount we give makes those fast sales soon pile up into a respectable profit.

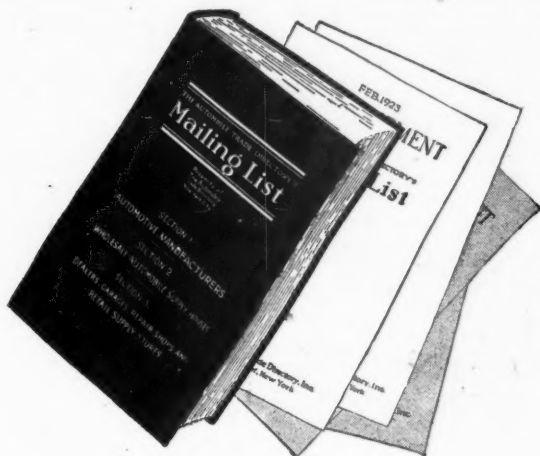
With the first dozen you get a mahogany-finished counter display. It shows just how the D-P Accelerator works. Saves a lot of talking, yet makes the sales even faster. Get one of them set up on your counter right away, and start the profits coming.

Only a hundred hand-picked jobbers can sell D-P Accelerators, so you are sure of good service, price-protection and a square deal all around. Ask for the name of the nearest.

Davis-Palmer Company

4750 Sheridan Road

Chicago, Ill.



Every Sales Prospect in the Automotive Industry

The Mailing List of The Automobile Trade Directory is a complete roster of the individuals and concerns who buy and specify or authorize the purchase of practically everything that is used in the manufacture and maintenance of automotive vehicles.

The manufacturing, jobbing, retail and service fields are covered by the three sections into which this List is divided. For direct circularization, for planning the work of salesmen and for reference purposes this Mailing List is indispensable.

Send for specimen pages and details.

THE AUTOMOBILE TRADE DIRECTORY
239 West 39th St., New York

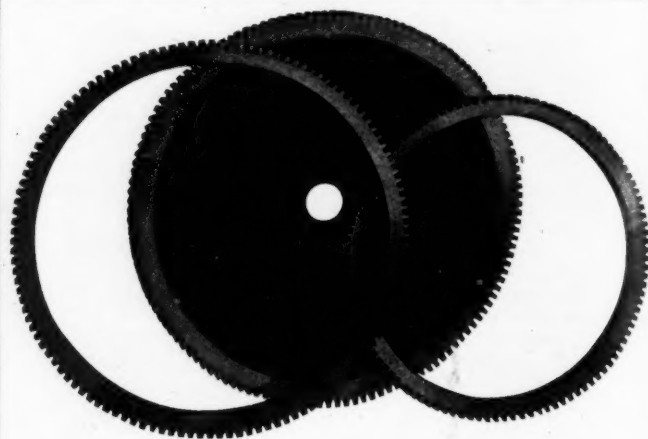
SPENCER-SMITH PISTONS



Largest Manufacturers
of

Pistons
Exclusively

SPENCER-SMITH MACHINE CO.
HOWELL, MICHIGAN (28)



New Low Prices On Fly Wheel Rings

Increased quantity production has enabled us to get out a new and lower price list on Meachem Steel Gear Rings for Fly Wheels. Also our trade discounts have been increased to more than offset the lower list prices. Write us for the new list and discounts.

The Meachem Gear Corp'n.
Ring Dept. Syracuse, N. Y.

LOMAR SHOCK ABSORBERS

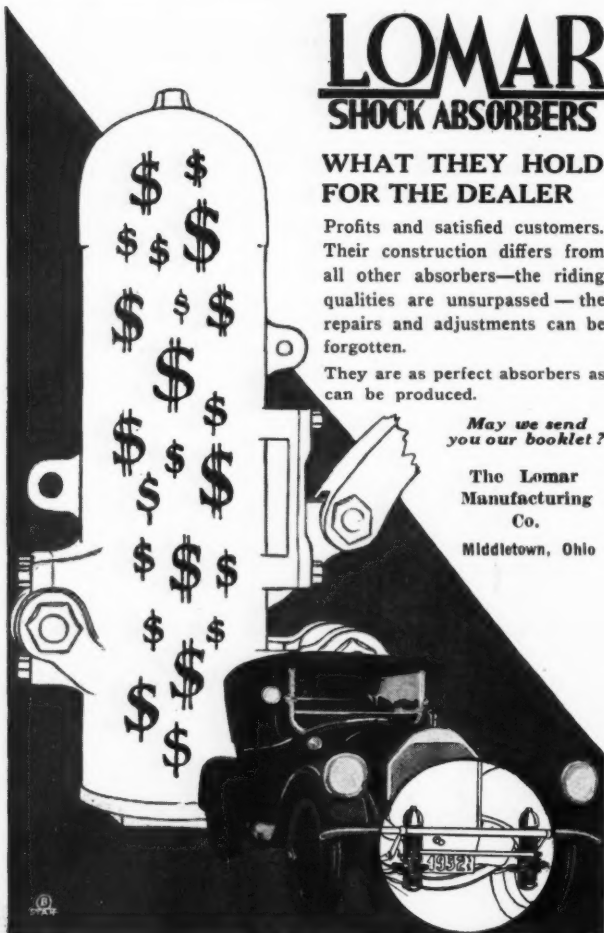
WHAT THEY HOLD FOR THE DEALER

Profits and satisfied customers. Their construction differs from all other absorbers—the riding qualities are unsurpassed—the repairs and adjustments can be forgotten.

They are as perfect absorbers as can be produced.

*May we send
you our booklet?*

The Lomar
Manufacturing
Co.
Middletown, Ohio



Why Waste Your Own Money?

When you have given a price on a job the only way to cut down the costs is to reduce the time necessary to complete the work. The Canton Portable Crane & Hoist helps you

do this. With this piece of equipment one man can do lifting and carrying of heavy parts that would otherwise require several men. And he can do it quicker. Your time will be saved—your profit on the job will be larger.

This crane will last a life time. It is made from the finest materials throughout. Our latest catalog will be sent to you free on request.



Canton Foundry & Machine Company
Canton, Ohio

New York Office 203 E. 15th St.

CANTON

PORTABLE
CRANE & HOIST

No Matter How Tight—



No matter how tight a wheel is on, this pulling tool will start it loose. We are wheel-puller specialists, and for years have supplied pulling tools that do the work.

Arms dropforged from high carbon steel, screw casehardened with inserted tool steel point.

Three models, 4 sizes of each, all equipped with Locking Arms of latest design.

Our 24-page folder is an eye-opener. Write for it.

CRANE PULLER CO.
Arlington Mass.

WHY

experienced automobile mechanics prefer the

EVER-HOLD

ONE PIECE—quick
ADJUSTABLE HOSE CLAMP



BECAUSE—

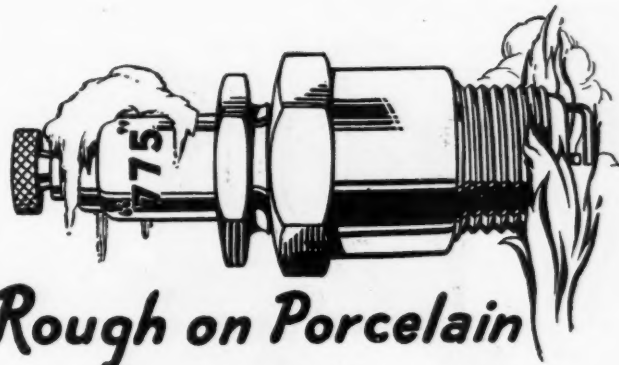
there are ten good reasons:

1. They are assembled, rolled up and ready to apply.
2. They have no surplus length to cut or break off.
3. They can be made smaller or larger.
4. They take only a few seconds to apply or remove.
5. The nut and bolt never has to be removed.
6. The nut and bolt is riveted together to prevent loss.
7. They are made of high-grade steel or brass.
8. They are rust-proof, practical and unbreakable.
9. Two sizes are all that are needed in the garage.
10. They are guaranteed by the Vitek Mfg. Co., of Omaha, Nebr.

The pioneer manufacturers of high-grade, one-piece, quick adjustable hose clamps that are used the world over.

VITEK MANUFACTURING COMPANY
Industrial Bldg. Omaha, Nebr.

NOTICE TO DEALERS: The jobber can supply you with Ever-Hold hose clamp. If not, write direct to us. There is money in selling our clamps—besides they sell fast and none of them come back.



Rough on Porcelain

Try this on your wife's fine china. Put ice on one side and turn a flame on the other. Raise it from zero to boiling temperature in one minute. That's about what a spark plug insulation has to stand, and if it cracks the plug is done for.

There's special porcelain specially fired to withstand these temperature changes. Manufacturers can tell it at a glance, because every insulator made of it carries the figures "775."

Is there a "775" on each of your plugs? You needn't pay any more for plugs that have it. Take a look at them, and remember the number when you buy new plugs.

Frenchtown Porcelain Company
Trenton, New Jersey



STANDS THE TEST

"Established in 1910—
Busy Ever Since"

You Can Forget That Joint
Forever If You Pack With

TRADE
TENAX
MARK

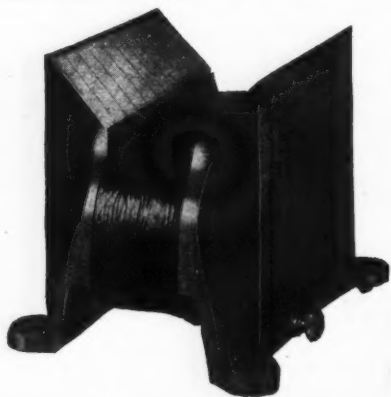
SHEET PACKING Compressed Asbestos

Men who once use Tenax prefer it to all other Compressed Asbestos Sheet Packings. A quality packing—proved so by its long life and splendid performance. Tenax has been used consistently for 20 years.

Ask for Tenax, the "Original Blue Sheet." In size 50x50 in. from 1/32 to 1/4 in. thick. Also in black graphited sheets 1/64 in. thick.

If your jobber doesn't handle Tenax, write us for information and name of most convenient source of supply.

**Advance Packing &
Supply Co.**
66 East Lake Street, Chicago



This Growler Costs But \$4.50

With it you can tell in ten seconds whether an armature is in good condition. If it is not, you are saved all the grief of having to do the whole job over, losing all your profit and the customers' goodwill besides. Operates on 110 Volt A. C. Current.

Sold direct or through your jobber. Resale price \$4.50 in Central and Eastern States, \$5.00 in Pacific States. Your check for above amounts plus twenty-five cents postage brings this moneymaker to you.

ARMATURES: We rewind any and all kinds of GENERATOR, MOTOR and MAGNETO armatures, and reship same day old armatures received.

FORD GENERATOR AND MOTOR ARMATURES.....	\$ 1.50
ALL SMALL DOUBLE UNIT GENERATOR AND MOTOR ARMATURES.....	5.00
SINGLE UNIT MOTOR GENERATOR ARMATURES.....	10.00
MAGNETO ARMATURES.....	\$3.75 to \$4.75

Armature Rewinding Co., Inc.

3301 Washington Blvd., St. Louis, Mo.



Special Garage Lathes

All engine lathes are not suitable for garage and repair-shop work. Some are too complicated and high priced—others can't stand up to the kind of work a busy repair-shop has to do.

Select a Carroll-Jamieson Garage Lathe, and you get the result of 20 years of lathe building. We know what you want in a lathe and we have designed accordingly.

C. J. Lathes are the greatest value possible. 13, 15 and 16 inch swing. 5 to 12 foot lengths.

Before buying anywhere, send postal for our Bulletins and Special Price Discounts.

Carroll-Jamieson Machine Tool Co.,
BATAVIA, OHIO

CARROLL JAMIESON
GARAGE LATHES



Do You Understand Two-Plug Ignition—

the system that ignites the gas at two opposed points at once? This burns the mixture completely and almost instantly; increases power and gasoline mileage; saves fuel and lessens carbon accumulation and spark manipulation. SU-DIG Series Spark Plugs added to the plugs now in your engine give Two Plug Ignition.

A Wonderful Improvement in the running of your car. No change in present equipment required. Write for free booklet, "How to get More Power." Please mention car. Superior Motor Power Co., 75A Spring St., New York.



The JOHNSON No. 118 Bench Furnace

Is a combination for—
Soldering,
Heat-treating,
Metal Melting

Quick acting, high temperature, most durable and efficient Bench Furnace for every bench.

Does Not Require a Blower.

Write for catalog of Gas Appliances.

JOHNSON GAS APPLIANCE CO.
Cedar Rapids IOWA



PAROB EXPANSION HAND REAMER BLADES CUT AT DIFFERENT ANGLES

Each successive blade cuts AT A DIFFERENT ANGLE from the one before it.

No CHATTER, no DIGGING IN—even in keyed holes.

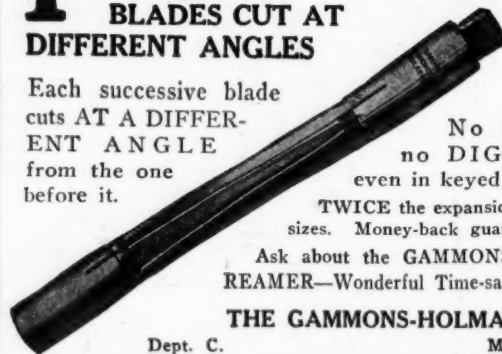
TWICE the expansion of others. All sizes. Money-back guarantee.

Ask about the GAMMONS TAPER PIN REAMER—Wonderful Time-saver.

THE GAMMONS-HOLMAN CO.

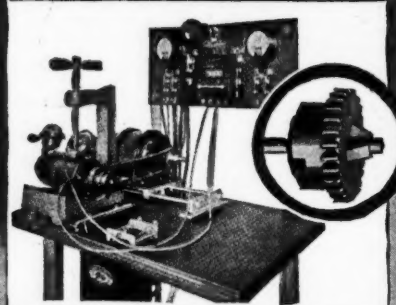
Dept. C.

Manchester, Conn.



EXCELSIOR TEST BENCH

With the Positive Drive and Speed Control



INCREASE YOUR PROFITS!

Starting, lighting and ignition pays bigger profits than any other branch of automotive service.

The Excelsior Test Bench equips your shop complete for this work.

Price \$385.00
Payable \$50 per month
Write for bulletin 975M

WEIDENHOFF 4350 ROOSEVELT ROAD
CHICAGO, ILL., U.S.A.

ACCURATELY MACHINED DALL SEMI-STEEL REPLACEMENT PISTONS DALL ACCURATELY MACHINED



For replacement work after a rebore or re-grind job insures your customer as good if not a better job than the original assembly.

Dall Pistons are simply GOOD Pistons, made to manufacturer's specifications, sometimes more refined in design and lighter in weight, but always as carefully made and inspected as though they had to pass the most rigid inspection of a Motor Manufacturer.

Dall Pistons are regularly furnished in standard and various oversizes, also semi-finished 1/16 oversize.

Write today for price list and delivery schedule on all items. Distributors at various points will take care of your requirements.

THE DALL MOTOR PARTS COMPANY

Post Office Station D, Cleveland, Ohio

Southwestern Branch

THE CARROLL CO.

2218 S. Harwood St., Dallas, Texas

SAVE THE FLYWHEEL



When a stripped flywheel job comes to you for repair, install an

EXCELSIOR STEEL RING GEAR

Instead of simply replacing with a new wheel.

It will save your customer money and please him—it will at the same time net you a bigger profit—it will prevent a recurrence of the same trouble and it is a job you can easily do.

The old teeth are machined off in a lathe and the Excelsior Steel Ring Gear heated and shrunk on.

These gears are made of

S.A.E. 1035 steel, cut and chamfered to the correct diameter and pitch.

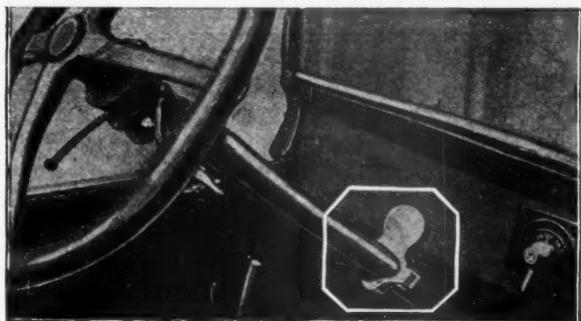
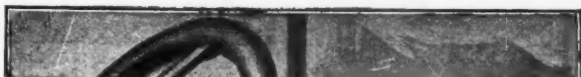
They insure quiet and smooth engagement with the starter pinion and are made in sizes to fit any American car or truck specified. Each gear is weld tested under hydraulic pressure. Particulars may be obtained from your jobber or direct from us.

SPRINGFIELD MFG. CO.

221 West Main St.

Springfield, Ohio

No More Steering Vibration

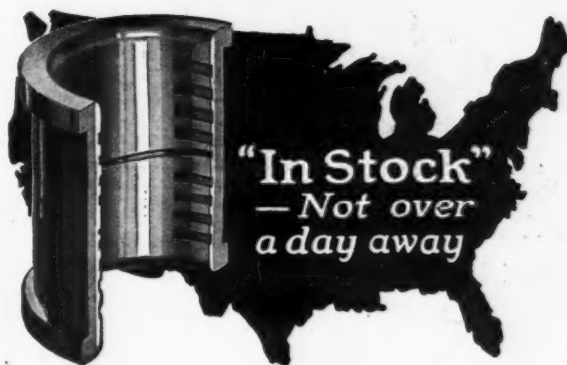


The D & D Steering Column Brace for Fords eliminates all steering wheel wobble and vibration over the most severe roads.

This strong arm made of alloy of aluminum and steel can be installed on a Ford in two minutes without any drilling or boring. Adds comfort to driving. Order a dozen from your favorite jobber and watch how fast they go. List price \$1.50. Manufactured by L. H. Daley & Co., Columbus, Ohio.

D & D

Steering Column Brace
for Fords



WHEREVER you are, Milwaukee Bearings are "not over a day away"! Four hundred distributors—covering every state in the Union—are ready at a moment's notice to serve you from a complete stock of Milwaukeees.

Did you ever have a customer who didn't want his car in a hurry? They all do! And right here is where Milwaukee Bearings keep promises for you.

And they're real bearings, too—virgin metal, ten times micrometer tested. Get our FREE car, truck and tractor list, with name of jobber stock nearest you.

Milwaukee Die Casting Co., Milwaukee, Wis.

MILWAUKEE BEARINGS



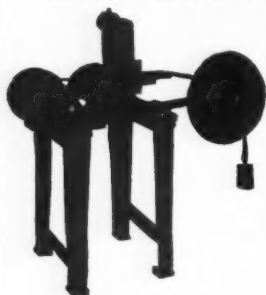
Re-Babbitted Bearing Exchange

We Re-babbitt any Automobile, Truck or Tractor Connecting Rod or Main Bearing with HIGHEST GRADE NICKEL BABBITT and finish them regular Factory sizes. All work guaranteed satisfactory or money refunded in full and transportation paid both ways. All RUSH Orders shipped same day order arrives.

We shipped over 100,000 Bearings last year. Over 5000 satisfied Dealers and Garages will recommend us. Save one-third to one-half your Bearings costs by sending us your work. Ship Parcels Post or Freight. We sell wholesale only.

Fremont Foundry & Bearing Works
Oklahoma City—U. S. A.

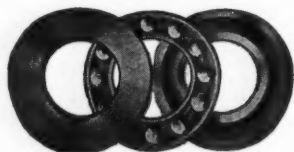
MR. RADIATOR REPAIRMAN



Make your own radiator cores and save 20% to 50% of their cost, give your customers quick service and a better core for less money. No need to carry large stocks of cores, and no damage in shipping. Increase your volume of business. Send for illustrated booklet describing our radiator core equipment.

Write for information to

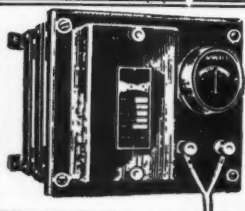
Radiator Engineering Co.
626 Nesselwood Ave. Toledo, Ohio



The Bearings Company of America, manufacturers of STAR Ball Retainers, for Thrust, Magneto and Cup and Cone types of Bearings. Complete Thrust Ball Bearings, Angular Contact Thrust Bearings and Angular Contact Radial Bearings (made to your B/P's and requirements).

THE BEARINGS COMPANY OF AMERICA
LANCASTER, PA.

Detroit Office,
1012 Ford Bldg.

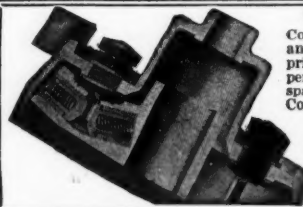


Automobile and Radio batteries charged for a nickel. Ten million car owners and five million radio fans are prospects for

THE HOMCHARGER

BIG PROFITS. WRITE NOW.
The Automatic Electrical Devices Co.
122 West 3rd St. Cincinnati, Ohio

Meilicke
Signals



THE DOUBLE CONTACT TIMER
Combines the "wipe" and unfailing. A wonderful dealer proposition. Write E. D. Hodge Tool & Mfg. Co., Watertown, N. Y.

Twin Timer
FOR FORD CARS TRUCKS & TRACTORS

WARNER GEAR COMPANY, MUNCIE, INDIANA



CLUTCHES, TRANSMISSIONS, CONTROLS, DIFFERENTIALS



Strengthen Your Ford With the Scholtes Chassis Brace

Prevent Costly Repairs. Distribute the Shocks. \$12 a Set —Parcel Post Prepaid in U. S. A.

State Representatives Wanted —Write Us

Chassis Brace Co., Inc.
Dept. M. Mobile, Ala.

Pat. May 1st, 1923

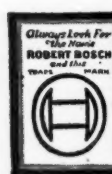


Beveled Edge
with Oil Groove

UNIVERSAL

2 rings that cover
every need

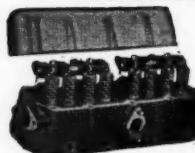
Ground or turned finish
Attractive jobber's proposition
UNIVERSAL MACHINE CO.
BALTIMORE, MD.



Bosch

The Genuine Original Bosch—Robert Bosch Products—hold records the world over. Send for book of "Facts". Robert Bosch Magneto Co., Inc.
The Genuine Original Bosch
Otto Heins, Pres., 123 West 64th St., New York

FRONTENAC CYLINDER HEADS and FRONTY-FORDS



The remarkable showing of the Fronty-Ford in the 500-Mile Race at Indianapolis May 30 was due solely to the performance of the Frontenac Cylinder Head. This Head is adapted for use on your Ford car by its designer and builder, Arthur Chevrolet. Write for FREE Catalog. Book, "How to Build a Fronty-Ford," \$2.00; free with orders of \$50.00 or more.

CHEVROLET BROS. MFG. CO., 410 W. 10th St., INDIANAPOLIS



WRIGHT HIGH SPEED HOISTS



Strom
BALL BEARINGS

U. S. BALL BEARING MFG. CO., 4551 Palmer St., Chicago, Ill.
All types and sizes of radial (single and double row), thrust, and angular contact bearings, for new or replacement work.

(2408)

Make the Big Money in Fall and Winter Overhaul Jobs

Cylinder renewing offers the big money in fall and winter overhaul jobs. Are you equipped to keep this profit yourself?—or must you let it get away to others?

Stormizing Machines
Will handle all your cylinder renewing. Will add a big profit to your winter shop jobs. Look into this better method of cylinder refinishing. Send today for our book: **Modern Cylinder Methods.**

STORM
MANUFACTURING CO.
406 A Sixth Ave. So., Minneapolis



PARANITE CABLE

Best for Automotive Work

We carry at all times a complete stock of every kind of cable used for automotive work. Many years of specialization have brought **PARANITE** Cables to the highest state of perfection. The finest grades of rubber compound, cotton and flexible enamel varnish are used.



FOR 33 YEARS THE STANDARD
IF IT'S **PARANITE** IT'S RIGHT

Quality jobbers handle quality cable—that's **PARANITE.**

Indiana Rubber & Insulated Wire Co.
810 Marquette Bldg., Chicago
Factory and General Offices—Jonesboro, Ind.



ANCHOR Automobile Lamps

You profit more by selling Anchor lamps. Seven years of close study and experience is in their design. The materials in them are the best the market affords. They give good, long service without complaints or make-goods. Our low manufacturing and selling costs allow you to make an extra margin of profit.

A sufficient stock of Anchor lamps requires small investment, and is cleaned out quickly by the constant demand. Jobbers and dealers both make money on the trouble-free Anchor line. Send for size and price lists with generous discounts.

ANCHOR ELECTRIC CO.
557 W. JACKSON BLVD. CHICAGO, ILL.

Stop Hand-Scraping

In fifteen minutes you can shave and burnish a bearing to nearly 100% bearing surface, with hardly any effort and no trial fitting.

USE AN

Elk Machine Tool

It also removes wrist pins, aligns and reams wrist-pin bushings, squares wrist pins, connecting rods and pistons.

We are now establishing distributing agencies. Good profits to hustlers.

Elk Machine Tool Corporation

243 West 17th Street, New York, N. Y.

Is Your Battery Business Paying?

If it isn't, it will be worth your while to investigate the Dragon franchise, because Dragon dealers, without exception, are making money and building a permanent business.

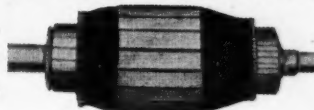
Write or wire

Englert Manufacturing Co.
Pittsburgh, Pa.

Dragon Storage Battery

ARMATURE REWINDING

One Trial
Makes You
a Customer



Work and
Service
Guaranteed

Note Our Prices

Generators, all makes.....	\$3.25
Liberty Fords.....	\$1.50
Starting Motors.....	\$1.50 to \$ 7.00
Motor Generators.....	\$5.00 to \$12.00

Our stock of 2000 armatures, for exchange purposes, insures good service.

A trial order will convince you of the merit of our work

PIONEER ARMATURE CO., INC.

2805 Cottage Grove Ave., Chicago, Ill., Phone Calumet 1076



A Better Motor

The development of this new Waukesha Bus and Truck Motor is a long stride in "heavy motor" efficiency. Its low operating costs builds bigger profits.

Write for details.

The Waukesha Motor Company
Waukesha, Wisconsin

BUS and TRUCK MOTORS

FORD OWNERS

CAN NOW HAVE

THREE-SPEED Transmission

This transmission has three speeds forward and one reverse and replaces the regular Ford transmission, drums, bands and all. The low gear is lower than the Ford, therefore more power, third or high is the same as the Ford high and second is halfway between.

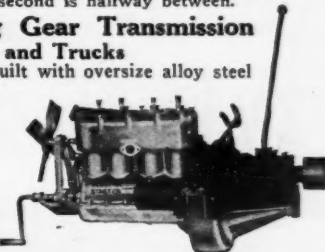
Cronk Simplex Sliding Gear Transmission

For Ford Cars and Trucks

This transmission is ruggedly built with oversize alloy steel gears. Multiple disc clutch. Foot brake on jack shaft outside of case. Hyatt Roller and Genelite bearings. Installation easy. No cutting or machining.

Write today for other interesting details.

E. D. & A. F. Cronk, Inc.,
140 Hotel St., UTICA, N. Y.



ALVORD QUALITY TOOLS



Taps, Dies, Cutters, Drills, Reamers
Send for Catalog
ALVORD REAMER & TOOL COMPANY
Millersburg, Pa.

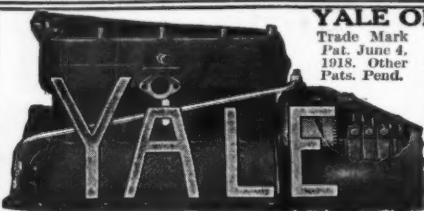
Motor Wheel
PRODUCTS

Motor Wheel Corporation, Lansing, Michigan

WAYNE
VALVE-SEAT REAMER

Pilot may be expanded to fit the valve-stem hole regardless of wear.
Cuts valve seat CONCENTRIC with hole. No chatter-marks. Full set in oak case \$15.00. Circular.

WAYNE TOOL MFG. CO.
Waynesboro, Pa.

YALE OILING SYSTEM
FOR FORDS

Trade Mark
Pat. June 4,
1918. Other
Pats. Pend.

Jobbers cash in now on strong advertising and sales campaign. Over 1,000 Ford dealers sell it. Write for discounts.

Roland & Koch
411 S. Main Street
Los Angeles, Cal.
2715 N. Broad Street
Philadelphia, Pa.

TAKE THE END-PLAY OUT!



Pat'd 7-22-'22

—WITHOUT PULLING THE MOTOR
THE C. A. ADJUSTABLE CENTER BEARING CAP corrects Ford crankshaft end play and sets magneto for highest efficiency without removing the motor. Easily and quickly installed. Guaranteed for one year. List price \$3.75. Ask your jobber or dealer or write us direct.

ADJUSTABLE BEARING CO., Inc.
Dept. M. Brazil, Indiana

R&V Knight
SIX

"EVERLASTING PERFORMANCE"

Engine Sealed and Guaranteed for 2 Years

R & V MOTOR COMPANY

East Moline, Ill.

Ask
Us About
Our Cylinder
Internal and
Surface

Grinders



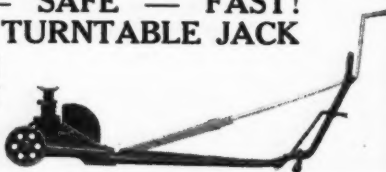
MAGNETIC CHUCKS

HEALD
MACHINE CO.
61 New Bond St.
Worcester,
Mass.

POWERFUL — SAFE — FAST!
"DICKERSON" TURNTABLE JACK

Handles all cars for all kinds of work. Great for spring and chassis repairs. Saves time—makes money for you. Priced RIGHT. Write for catalog.

C. A. DICKERSON
COMPRESSOR CORP.
Buffalo, N. Y.



NO-LEAK-O PISTON RINGS

Won't Leak Because They're Sealed With Oil



No-Leak-O Piston Rings are making money for dealers everywhere. Their "oilSEALing" groove—found only in No-Leak-O—packs an oil film in between piston and cylinder walls like "packing" in a pump. Oil and gas stay where they belong. National advertising is helping the dealer sell No-Leak-O by teaching the motorist the lesson of more mileage on less oil and gas. It will pay you to stock No-Leak-O at once.

Price 50c and up.
NO-LEAK-O PISTON RING CO., Dept. T-57, Muskegon, Mich.

KISSEL

The Custom Built Car



The Aristocrats of
Motordom

7 Models—Open and Closed
Distributors in principal
cities. Open territory now
being closed.

Kissel Motor Car Co.
Hartford, Wis.

INTERNATIONAL
MOTOR TRUCKS for low-cost hauling

Models range from the 2,000-lb. Speed Truck to the 10,000-lb. truck. Some territory is still open for dealers.

International Harvester Company of America
(Incorporated)
Chicago, U. S. A.

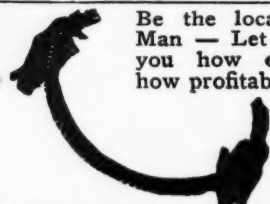
CYLINDER HONES

Can be operated without removing engine from vehicles. An absolutely true hole. Small first cost. Large profits. Have efficiency of large, expensive grinders.



KALAMAZOO

MICHIGAN



Be the local Logan
Man — Let us show
you how easy and
how profitable it is to

install Logan Ring
Gears.

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LOGAN FLY
WHEEL
RING GEARS



KOKOMO RUBBER CO., Kokomo, Indiana
131 South Main St.

Kokomo Long Life tires and tubes make money for dealers who handle them.

Kokomo Twin-Grip Fabrics
Kokomo Two-Grip Cords
Kokomo Everlaster Red Tubes
Kokomo Standard Gray Tubes



MOTORBLOC

"The Motor Driven Chain Hoist"
SAVES TIME, IN AUTO REPAIR
SHOPS

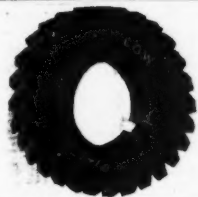
Light — Portable — Mechanically Right

Write for Bulletin S-101

MOTORBLOC CORPORATION
Sumnerdale, Philadelphia, Pa.

"The Best-Equipped Shop
Gets the Business"





Noiseless Timing Gears
Install quietness—Cloyes NOISELESS Timing Gears. They give the motor a soft, even "purr"—permanently.

Cloyes Gear Works
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N. Loewenthal, Box 952, Ft. Worth, Texas



UNIVERSAL HOSE CLAMP

Adjustable. Two sizes will clamp any hose of any diameter. Made from cold rolled steel out of wire. No rough edges to cut hose. Put on in less than a minute. Everlastingly leak-proof. Order Universal Hose Clamps. Trademark on every clamp and carton. Get them from your jobber—or write us.

UNIVERSAL INDUSTRIAL CORP.

Hackensack, N. J.

\$1500 to \$3000 A YEAR Easily Made Charging Batteries

HB 8 Hour Constant Potential Battery Charger handles double your present battery charging business with no increase in space. Lowers cost of current, saves half on labor. 8 hour service with HB Constant Potential outfit eliminates competitors. \$30 monthly pays for outfit. 30-day free trial. Write for information. HOBART BROS. CO., Box AR 404, Troy, Ohio.



ACE aligning gauge—

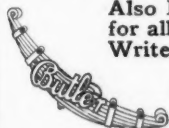
An absolute necessity for squaring up pistons and wrist-pins with the crankshaft. Made to real tool-making standards. Complete with 10 precision ground bushings \$25.00, with 2 bushings \$20.00. Ford Special \$10.00. Send for circular. 30 days' trial if desired.

MARK W. JONES

52nd Street & Lancaster Ave., Philadelphia, Pa.

AXLE SHAFTS and SPRINGS

Also Keys, Key Stock and Nuts for all makes of cars and trucks. Write us about Gilliam Bearings



BUTLER AUTOMOTIVE STEEL COMPANY

Easton, Pa. 101 D Street



CARTER OIL GAUGES

For Ford, Chevrolet and Dodge—Only \$3.75
Buick, Oakland and Chandler—\$5.00

ACCURATE—EASY TO INSTALL—GUARANTEED

Screw gauge to dash or instrument board; connect copper tube with elbow in place of lower petcock. No oil passes thru tube or gauge. No moving parts, floats or plungers. Easy to sell; easy to install. Big money-makers.

Order from your jobber or write for discounts.

Carter Motor Accessories, Inc., 388 Pearl St., Buffalo, N. Y.



Cole Visible
Gasoline Gauge

for Fords and Chevrolets
Write for Proposition to Dealers

The Stemco Eng. Co., 70-78 Webb St.
Dayton, Ohio



Wedge-Rite piston rings are 3-piece rings following the best engineering practice. The patented wedge takes up the wear, keeping the groove and cylinder wall tight against oil and compression leakage. Wedge-Rite Piston Rings are made from the best individual castings.

Wedge-Rite

Plattsburgh, N. Y.

Valve Grinding Compound

The New Handy Can

Monarch Valve Grinding Compound, "The Quality Compound" since 1907. Packed in 4-oz. boxes—2-3 coarse, 1-3 fine—List 50c.

PRODUCERS OUTLET CORP.
Red Bank, New Jersey, U. S. A.



There's a WATKINS Branch Near You

If you want genuine Watkins Rebuilt Connecting Rod service, which includes not only rebabbitting the rod to S. A. E. specifications, but equipping the rod with laminated shims, new bronze piston pin bushing and new bolts and nuts, send your old rods to the authorized WATKINS plant nearest you. Rebuilt rods shipped same day they are received.



WATKINS Complete Rebabbiting Service

CABLES of Quality

The Packard

Standard since the beginning of the industry.

Electric Company

WARREN,
OHIO



Monogram Light Distributors

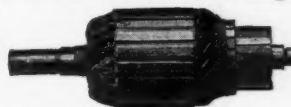
Standard equipment on 114 of America's foremost cars and trucks.

Pass I. E. S. rules and all state tests

MONOGRAM LENS CORPORATION
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Send Us Your Armature Repair Work

FORD
ARMATURES
REWOUND
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MOST ANY
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GENERATOR
ARMATURE
\$5.00

ALL WORK GUARANTEED—WRITE FOR PRICE LIST
U. S. AUTO SUPPLY CO., 3845-49 S. WABASH AVE., CHICAGO



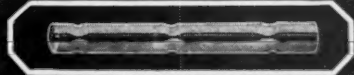
RED GIANT RIM TOOL

The world's most popular tool for changing tires on split rims. Sold in every state in the Union and eight foreign countries.

If your jobber cannot supply you with RED GIANT RIM TOOLS do not accept "something just as good" but order direct and send us your jobber's name and address. Dealers price, \$3.25.

RED GIANT TOOL CORP.
Lynchburg, Va.

"REQUIRES ONLY HEAT"



SAMPLE FREE

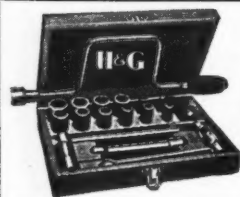
PERFECTION
GEAR
COMPANY

1475
Michigan Ave
CHICAGO

PERFECTION
Silent Timing
GEARS

SILENT
DURABLE
DEPENDABLE

WORLD'S
STANDARD
REPLACE-
MENT



140 Combinations —all in this ONE set

Everything you need, in one small box, compact, accessible, and a real mechanic's outfit. Sockets will not break. Fully guaranteed. Ask your dealer or write us.

The Eastern Machine Screw Corp.
10-20 Barclay Street, New Haven, Conn.



Should Be On Every Car
You Sell

The Spencer Lock Tilting Steering Wheel first adds comfort in the driver's seat—then protects the car from theft. And the insurance it saves pays back the purchase price. Ask your jobber for details. Made for Ford, Dodge, Overland, Chevrolet 490 and Superior, Maxwell, Star and Gray Cars.

The Spencer Mfg. Co.
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The Francisco Auto Heater—

—Made in 60 different models for all makes of cars—heats both closed and open cars. Gives from two to three times as much heat as any other heater.

THE FRANCISCO AUTO HEATER MFG. CO.
Columbus, Ohio

DIAMOND Automatic Automobile SAFETY SIGNAL

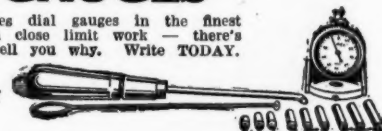
Dealer Wanted—Send for Folder
Automotive Signal Manufacturing Corp.
703 Finance Building Philadelphia



DIAL GAUGES

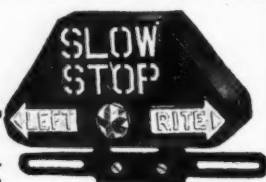
When you find Ames dial gauges in the finest automotive shops, on close limit work—there's a reason. Let us tell you why. Write TODAY.

B. C. AMES COMPANY
Waltham, Mass.



DIAMOND Automatic Automobile SAFETY SIGNAL

Dealer Wanted—Send for Folder
Automotive Signal Manufacturing Corp.
703 Finance Building Philadelphia



THREE PRODUCTS YOU NEED

ZIP FRICTION PASTE, for fitting in bearings.
ZIP GRINDING COMPOUND, for valves.
ZIP LAPPING COMPOUND, for lapping in pistons.

The Original
Water Mixed.
U. S. Pat. 1353197

Write For Samples
THE ZIP ABRASIVE COMPANY
THE ZIP MFG. CO.
Ask Your Jobber.
Cleveland, O.
Denver, Col.

Piston Pins



and Valves

Oversizes

Standards

Specials

Prompt shipment, highest grade materials, precision accuracy to closest dimensions and unexcelled workmanship. Send for specification and price lists—they make pin and valve buying simple.
THE TRINDL CO., 2917 Wabash Avenue, Chicago, Ill.



CANEDY-OTTO MFG. CO.

Manufacturers of Automotive Equipment, Drills, Punches, Shears, Shrinkers, Countershafts, Grinders, Buffers, Forges, Blowers, Tuyere Irons and Blast Gates.

Main Office and Factory—Chicago Heights, Ill.
New York Branch—407 Broome St.
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Front-Wheel Brakes

supplied for ANY MAKE of car. Easily installed. Golden repair opportunity. Write for price list and BIG DISCOUNT.

Green Engineering Co., Dayton, O.

"BULL DOG" Foot Accelerator for Fords



No stock of Ford Accessories complete without this popular item.

Manufactured by
The W. H. Thomas Mfg. Co., 404 W. Sixth St.,
Spencer, Iowa
Sales Rep. The Fulton Co., Milwaukee, Wisconsin

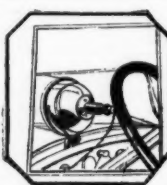


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FLOAT THE CAR ON AIR

Promotes smooth, joltless riding by cushioning all road shocks. Positive two-platen action against air pressure and oil. Easily installed and permanent in operation. Big profits for live dealers and distributors.

THE REID AIR SPRING COMPANY
New Haven, Conn.



INSHIELD SPOTLIGHT

No Glass to cut—Inside the windshield. Adjustable to all positions.

Two models—all nickel finish \$10.00. Two sizes, Senior model 5½" in diameter. Junior, 4½". Black enamel \$8.50. Junior size only.

Jobbers, Dealers, write for details.
Genuine Inshield Spotlight made only by
The Thal & Bitter Machine Company
TOLEDO, OHIO

Eight body types—\$1295—\$2250

STEPHENS

Finer Motor Cars At Lower Prices



BRAKE LININGS and CLUTCH FACINGS

Always used where safety and service are the first and only consideration.


KELSO M'FG CO.,

TRENTON, N. J.


Equip Your Shop

with
HOYT Electrical Testing Instruments
Burton-Rogers Co., Boston, Mass.





There is a Harvey Steel Disc Wheel in the various styles which we make for each size of car at interesting prices.



Rim & Wheel Co., Inc.
25 E. Jewett Ave.,
Buffalo, N. Y.



Lamps and Accessories
A quality group of fast selling items for every automotive requirement.
Organized to supply the jobber trade exclusively.
THE CINCINNATI VICTOR CO.
714 Reading Road
Cincinnati, Ohio
Owners, by purchase, of the Jobbers' Division of the Corcoran-Victor Co.


When It Rains— There is big business for the wise dealer who carries a select stock of
ADCO WINDSHIELD WIPERS
Clear Vision Clearsite
Adco Kleanall Rainco
A Type and Price for Every Customer
Write for descriptive literature on 76 Adco Products, giving your jobber's name
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TEST YOUR BATTERIES
by the Chart Method. Something New. Send for free booklet, today.
Allen-Bradley Co.
Electric Controlling Apparatus
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WEL-EVER OIL CONTROL PISTON RINGS
Write for interesting circular on oil pumping and details about this fast selling piston ring.
THE WEL-EVER PISTON RING CO.
1713-15 Canton St. Toledo, Ohio

Less Oil and Gas—from WEL-EVER equipped units. Its oil control feature is guaranteed to stop oil pumping, prevent spark plug fouling and reduce carbon formation.



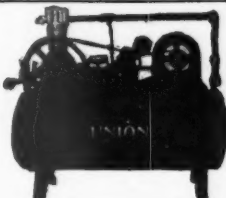
The COURIER Six
Nine body types, from \$1,295 to \$2,195
THE COURIER MOTORS COMPANY
SANDUSKY, OHIO



One Dealer Sells 125 in One Month
Similar reports about the Optoshield are coming in constantly from all parts of the country. This accessory has taken its place among the most popular sellers in recent years.
THE OPTOSHIELD
Fits any windshield. Made of sapphire blue scientifically made optical glass. Driver looks through it and is relieved of all eye strain from oncoming head lights, sun glare, snow glare and road glare. Price \$3.50. Territorial distributors, dealers and agents wanted.
Detro Sales Service Co., 1647 Penobscot Bldg., Detroit, Mich.

Every Tungsten Spark Plug Sealed in a Metal Container
"Always On The Job"
Tungsten Spark Plug Co., St. Joseph, Mo.


For Unusual Service
Union Air Compressor, Union for Service, Union for Strength, Union for Reliability. Built by Union Equipment Co., Butler, Pa. The best machine on the market for the money.
Union Equipment Company
Butler, Penn.



DUESENBERG
The Original Straight-Eight
With Four Wheel HYDRAULIC Brakes
INDIANAPOLIS, U. S. A.




RED DEVIL
SELF-ALIGNING BURNISHING MACHINE
Makes it possible to fit over-size pistons without removing engine from the car when the variations do not exceed 5/1000 of an inch. Cylinders slightly tapered, out of round, or with shoulders worn by pistons or rings may be made round, straight and true. Price \$25. 12 ounce can Red Devil Compound, \$1.50. Write for complete details.
MID-WEST MFG. CO. Minneapolis, Minn.

Welco Accelerator
for Fords
Easily installed—one hole to drill. Works independent of throttle. Any engine speed by setting adjusting nut. In colored carton complete with instructions. Write your Jobber. Also makers of Welco Step Plates, Gas Tank Caps, Blanket Holders, etc.
The Welker-Hoops Mfg. Co., Middletown, Conn.




LINENDOLL EXHAUST HEATER
Attractive in appearance, with cleaning features of removable heating coil with no connecting joints inside the heater pan to leak. Meets instant approval. No odor or noise. Easily installed and operated. Will boost your winter sales—get our attractive trade proposition.
THE NORWALK AUTO PARTS CO.
Norwalk, Ohio

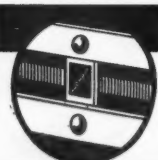


JACOBS CHUCKS INSURE ACCURATE DRILLING
Write for circular. "A Jacobs Chuck for Every Purpose."
THE JACOBS MANUFACTURING CO.
Hartford, Conn.

STEVENS TOOLS
SPEED UP
OVER 50 WONDERFUL SHORT CUTS IN NEW CATALOG T-105
ASK FOR IT
STEVENS & COMPANY
375 BROADWAY, NEW YORK



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Send sketch or model today for examination and report, Record of Invention blank on which to disclose your invention and new guide book, "How to Obtain a Patent," sent free. Promptness assured. Highest references. WRITE TODAY. CLARENCE A. O'BRIEN, Registered Patent Lawyer, 210 Southern Bldg., Washington, D. C.



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"Full Doubleface"; "Doubleface" and "Singleface"—the complete line that ties up least money and still meets every demand. Write for literature, prices, discounts.

L. P. Halladay Co., Decatur, Ill., U. S. A.

for ALL TYPES of CARS

GRINDING
MACHINES

BORING
MACHINES

LANDIS

LANDIS TOOL COMPANY

WAYNESBORO, PA.

NEW YORK OFFICE:
51 Chambers St.



2-WAY HYDRAULIC SHOCK ABSORBER

More than a Shock Absorber because it fluid-cushions all movements between the body and the chassis—gives a new experience in riding comfort.

Good distribution territory is still to be allotted. For information write to

AUTO SPRING CONTROL CO.
Jamestown, N. Y.

THE QUINCY SILENT AIR-MASTER

The Most Air Per Dollar Cost

WALL PUMP & COMPRESSOR CO.

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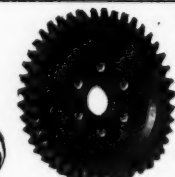
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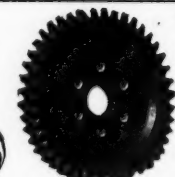
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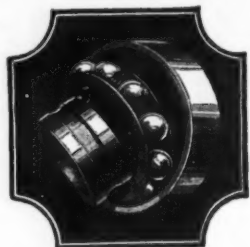
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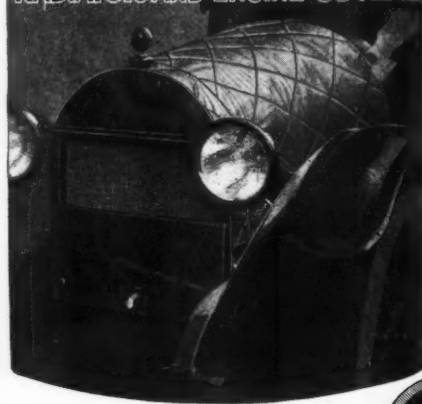
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M.A. 9



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Under Contract
January 1, 1923

STUTZ DEALERS
ADDED
Jan. 1 to Sept. 1, 1923

Chart Showing Increase in Stutz Dealer
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Retail Sales
7 months 1923

Retail Sales
12 months 1922

Stutz Retail Sales for First 7 Months of This
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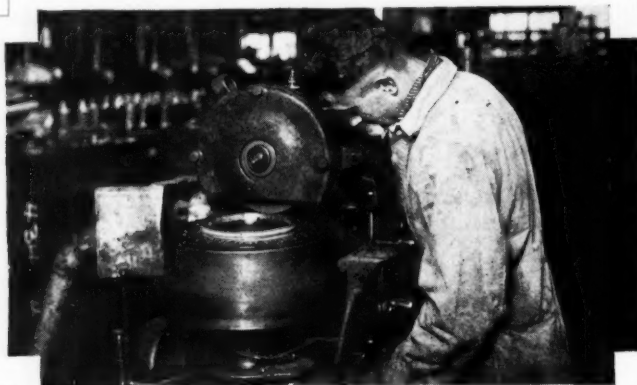
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